nitsan bartov

portfolio

NITSAN BARTOV

ARCHITECT // COMPUTATIONAL DESIGNER

I like to try and breathe life into architecture by bringing different worlds together - advanced technologies, traditional crafts, animation, music and dance - and make designs people can relate to and care about. A hard-worker and a quick-learner, I can adapt to new environments and happy to take on challenges and responsibilites. I work best as part of a team, and suffer from a chronic, contagious positive approach to life.

CONTACT

+45 91 85 25 78

nitsan.bartov@gmail.com

linkedin.com/nitsan-bartov

@bartov

Burmeistersgade 1B, 3tv
1429 København K

EDUCATION

Master of Arts (M.A)
Computation in Architecture
The Royal Danish Academy
2020-2022

Bachelor of Architecture (B.Arch)
Magna Cum Laude
Tel Aviv University
2014-2019

Semester Exchange
Urban Design Studio
Monash University
2016

SKILLS

Language

English - Fluent
Danish - Intermediate (PD3)
Hebrew - Native
Arabic - Basic

WORK EXPERIENCE

Architect

RAN BLANDER ARCHITECTS / 2017-2019

Played a vital role in various urban planning and renewal projects. My responsibilities included initial planning, working plans, system coordination, and securing building permits for residential projects. This experience significantly improved my skills in urban planning, project coordination, and regulatory compliance.

- Initial planning and working plans for residential projects
- System coordination for urban planning projects
- Procurement of building permits
- Skills gained in urban planning, project coordination, and regulatory compliance

Architect

MANN-SHINAR ARCHITECTS / 2019-2020

Helped lead an 800-apartment urban renewal project, managing planning, building permits, consultant coordination, and BIM models in Autodesk's cloud environment (BIM 360), while intermittently working on other projects in various scales. This enhanced my expertise in urban development, large scale residential planning and complex Revit environments.

- Leadership in an 800-apartment urban renewal project
- Project planning and building permit acquisition
- Consultant coordination and BIM model management
- Proficiency in complex Revit models and urban development

Research Assistant

THE ROYAL DANISH ACADEMY - IBD / 2021-2022

Actively participated in a PhD research project on parametric 3D printing in clay. My role involved developing geometry scripts, generating g-code, and providing essential support in teaching and course construction. This opportunity expanded my expertise in 3D printing technology, research methodologies, and collaborative research

- Development of geometry scripts and g-code generation
- Active participation in a PhD research project
- Teaching and course support
- Expertise in 3D printing technology and research methodologies
- Experience in material studies for architecture

CURRICULUM VITAE

SKILLS

Professional

Revit	●●●●○
AutoCAD	●●●●●
Rhino	●●●●●
Grasshopper	●●●●●
Sketchup	●●●●○
QGIS	●●●○○
CityEngine	●●○○○
Cinema 4D	●●●●●
Lumion	●●●●●
Enscape	●●●●●
Photoshop	●●●●●
Illustrator	●●●●●
InDesign	●●●●○
After Effects	●●●●○
Premiere	●●●○○
Python	●●○○○

Practical

Architectural Planning
Architectural Documentation
Architectural Rendering
Graphic Design
Animation
Movie Editing
Robotic Fabrication

REFERENCES

Katrine Lotz
The Royal Danish Academy
Head of Institute,
Institute for Urbanism % Landscape
E: klotz@kglakademi.dk

Ami Shinar
Mann-Shinar Architects
Founder, Partner
E: ami@mann-shinar.com

DIGITAL PORTFOLIO

Personal Website
www.nitsanbartov.com

WORK EXPERIENCE

Student Coordinator

"DARK" - THE ROYAL DANISH ACADEMY STUDENT UNION / 2021-2022

As a Student Representative and part-time employee, I managed budgets, initiated and oversaw projects, and coordinated with the Academy's administration and students.

- Budget management and project initiation
- Project oversight and coordination with administration
- Effective communication with students
- Enhanced project management and stakeholder coordination

Institute Coordinator

THE ROYAL DANISH ACADEMY - IBBL / 2023-today

As the Institute Coordinator, I oversee the budget, manage administrative processes, and lead multiple projects. I also actively contribute to ongoing research efforts. This position has strengthened my leadership, organizational, and research skills.

- Budget oversight and administrative management
- Leadership and project management
- Coordination of logistics
- Strengthened leadership, organizational, and research capabilities

VOLUNTEER WORK

Identitetsansvarilg

ROSKILDE FESTIVAL / 2022 - today

"Identitetansvarlig" for the central area. Responsible establishing identity and assisting orientation through design, coordination and execution of sustainable spatial solutions.

Head of Administration

BUILDING DIVERSITY / 2022 - today

Leading projects and processes in organizational structure, visual identity, communication and events

PROFESSIONAL DEVELOPMENT

Lokalplanlægning For Begyndere
Dansk Byplanlaboratorium
Fredericia / 25-26 October, 2023

CONTENTS

academia

research

practice

academia

project name:

KIN-AESTHETICS

brief

MASTER'S THESIS PROJECT

year

2021-2022

abstract

This research project explores the possibilities of developing methodologies for designing architecture and architectural spaces, by integrating human movement and bodily expressions as the basis for designing physical architecture. It aims to lay the groundwork for new geometries, spaces, textures, and experiences by using human motion as a dynamic input.
To achieve that, a series of initial experiments were conducted, to test the possible connections between motion-capture and architectural design. These experiments were critically assessed, laying the grounds for developing a design methodology, which will be used to design a series of architectural spaces and events.

This project is onging, and only a fragment of it is shown in this portfolio

tools

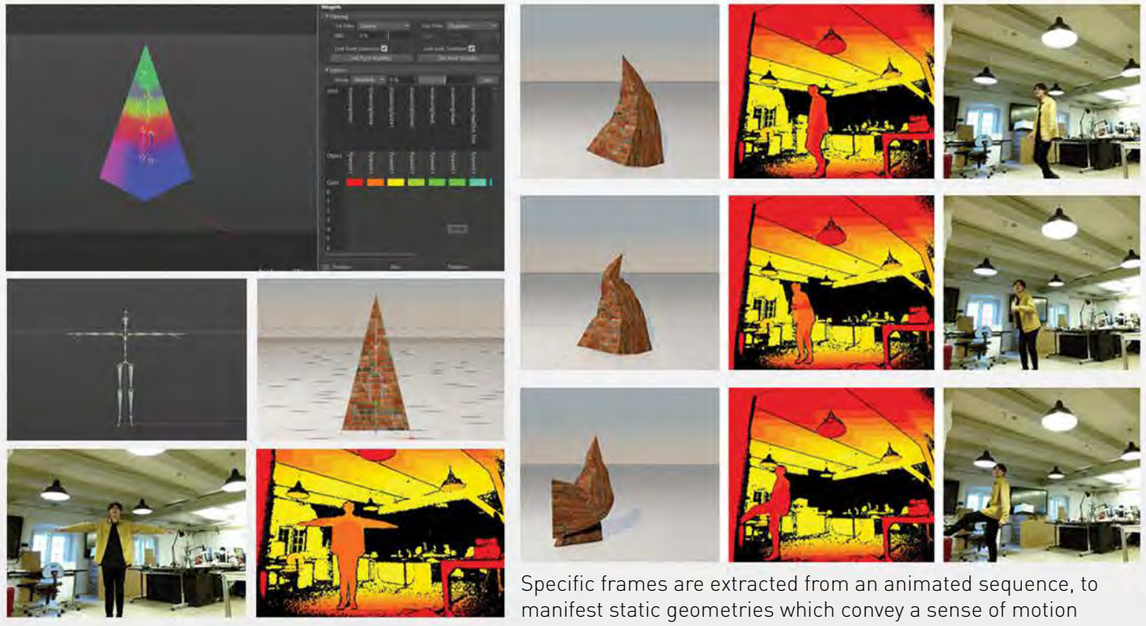
motion-capture, cinema 4d, octane, rhino, grasshopper, photoshop, illustrator, after-effects

institute

Computation in Architecture, The Royal Danish Academy

FROM MOTION CAPTURE TO FORM

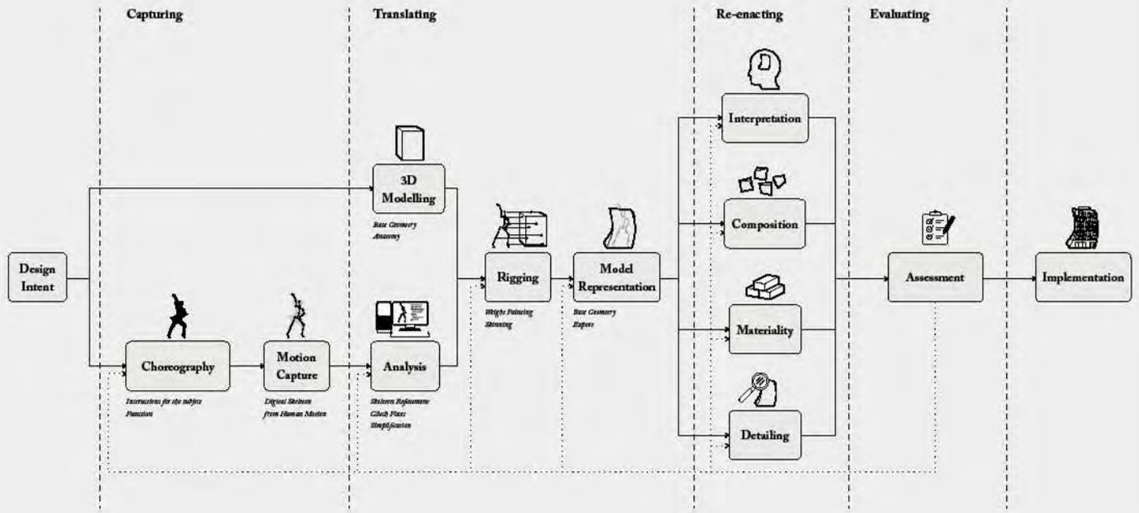
First attempts in translating digital motion capture into abstract form.

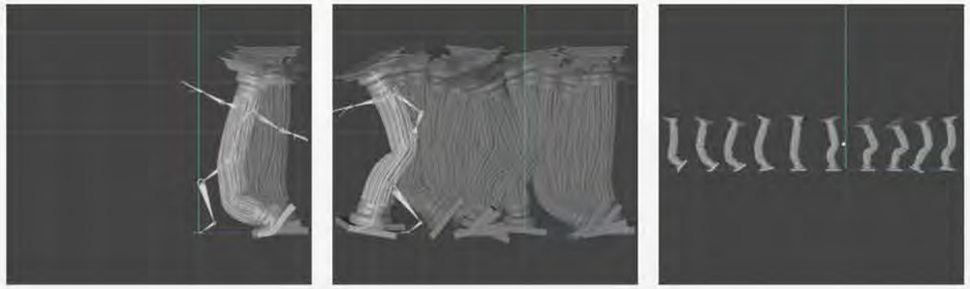


Specific frames are extracted from an animated sequence, to manifest static geometries which convey a sense of motion

DESIGN METHODOLOGY

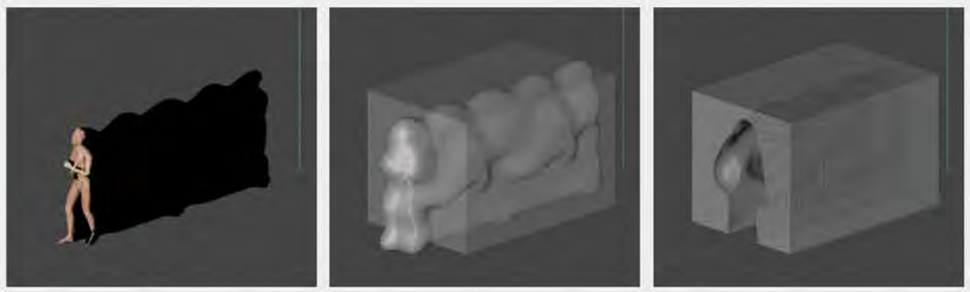
By critically assessing the results of the experiments, it is possible to map the suggested connection between motion-capture and architectural design into 4 phases - Capturing, Translating, Re-enacting, Evaluating. Different approaches can be applied in each phase in coherence with the program, the events, and the design aspirations.





(left) the beginning of the walking sequence, the column is rigged into the left leg of the subject. (middle) the full walking sequence, with the captured frames along it, forming a chronophotograph. (right) the frames are spread equally to create a rhythm.

Captured moments in the recorded motion sequence, where the subject performs a "sad" posture of different sorts. Though the motion is chronological, the captured postures can be re-organised and composed in space to allow for different wayes of experiencing and interpreting.



(left) a recorded walking sequence is traced, leaving a digital trail. (middle) the digital trail of the walk is amplified and softened, becoming more spatial and abstract while maintaining the kinetic qualities of the movement that created it. (right) the amplified trail is used to carve into the solid geometry, leaving the negative space as the corridor.

ARCHITECTURAL APPLICATIONS OF MOTION CAPTURE

The Columns

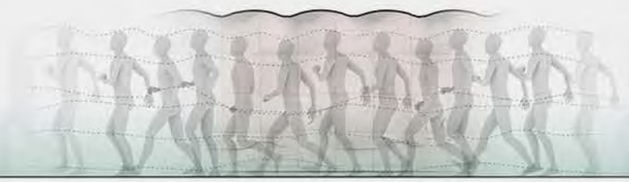
The visual aesthetics of walking, embedded in the columns, allow for a sequential, rhythmic experience in transitional spaces. When splitting a continuous motion into frames, it is possible to control the rhythm in which the movement is represented, as well as creating intentional gaps.

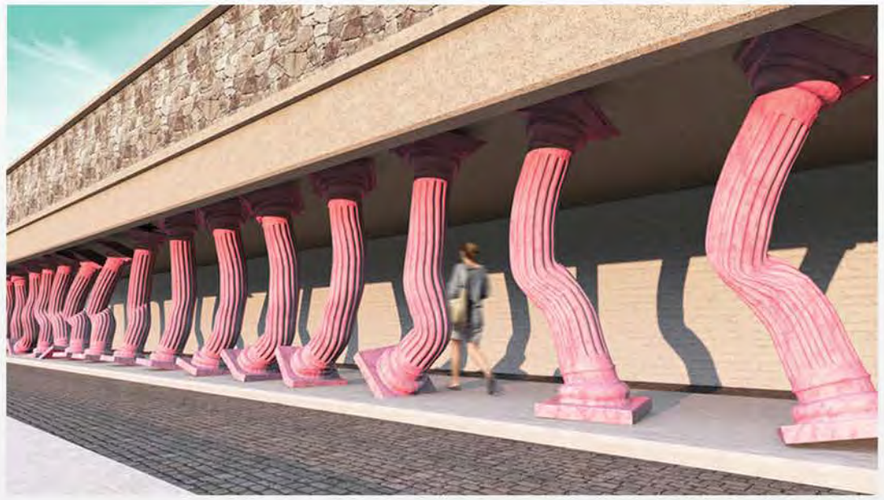
The Memorial

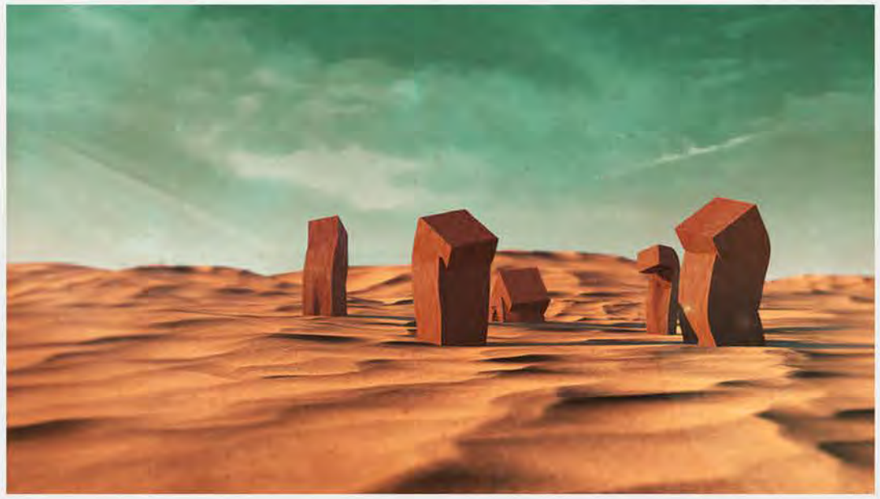
The embodiment of recognizable posture into architectural geometries, can develop into a phenomenological experience, accomodating specific emotions and feelings by embedding them in the architectural space.

The Tunnel

When the actual motion which is to ce conducted in the space is the motion used to create it, there is an opportunity for a bi-directional relationship between the inhabitants and the space, where the space can not only echo the human movement in it, but also help direct it.

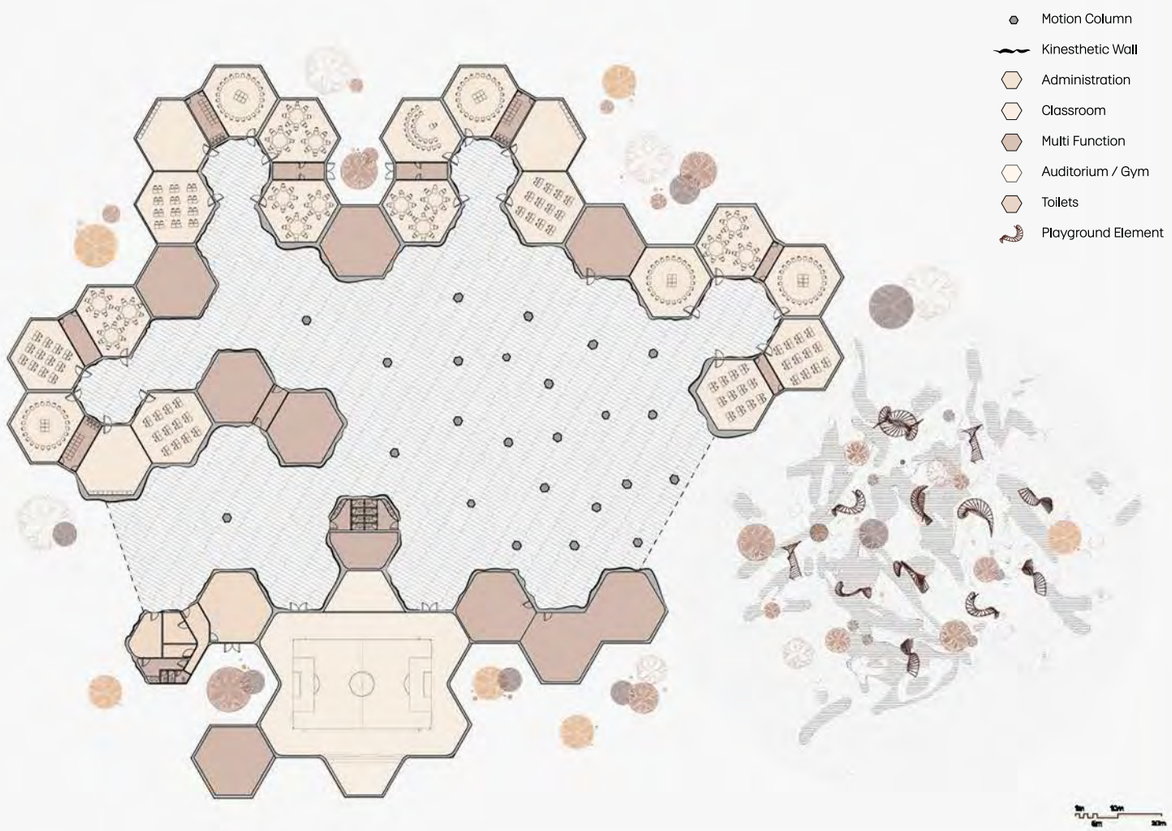






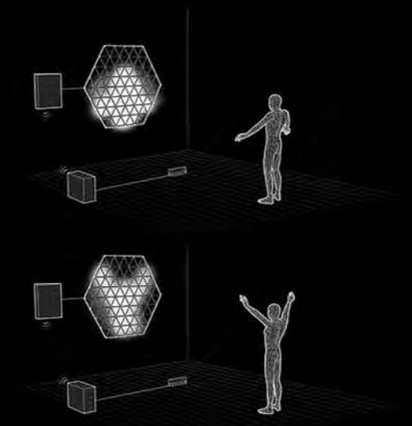
CONTEXT - A SCHOOL OF MOTION

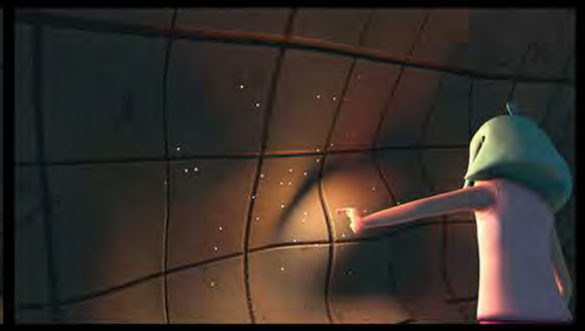
Different approaches of integrating motion into architectural design are tested over the context of an imaginary elementary school. Following the likes of Rudolf Steiner and Émile Jaques-Dalcroze, which emphasized the importance of movement in education, different spaces and activities in the school will make use of motion through different media, to try and evoke kinesthetic empathy to the space.

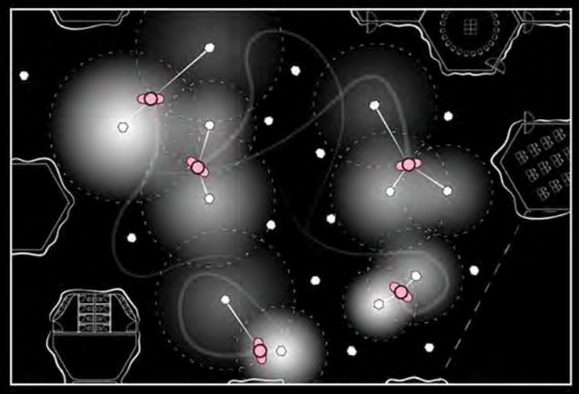


KINESTHETIC LIGHTING

To add a layer of kinesthetic empathy over the static, motion-infused geometry, a dynamic, responsive light system was developed, applied with an LED-based, digitally coded lighting fixture. The light reacts, changes and responds to the subject\s movement, with a varying amount of delay and response time.

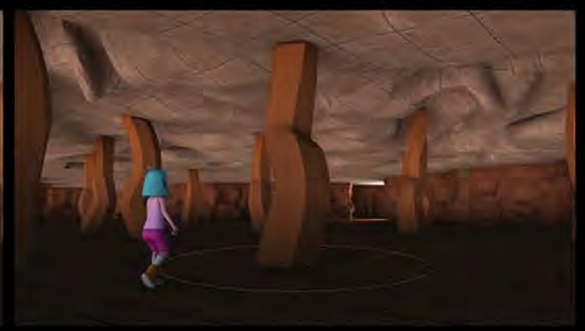






EPMATHIC COLUMNS

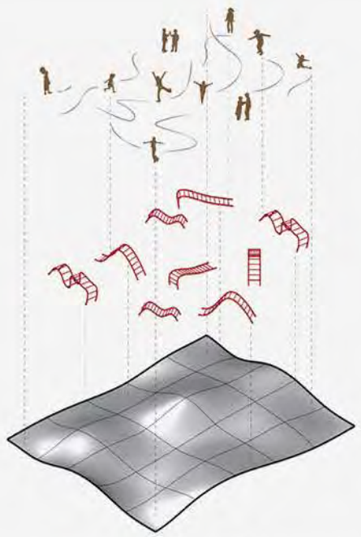
To embed a kinesthetic experience in the interior spaces, the structural columns are equipped with motion sensors on the bottom, and LED fixtures at the top. As the columns react the the activities in the space, the more movement there is - the more light is produced to accomodate it, making the interactive lighting system not only kinesthetic - but also practical.



THE PLAYGROUND

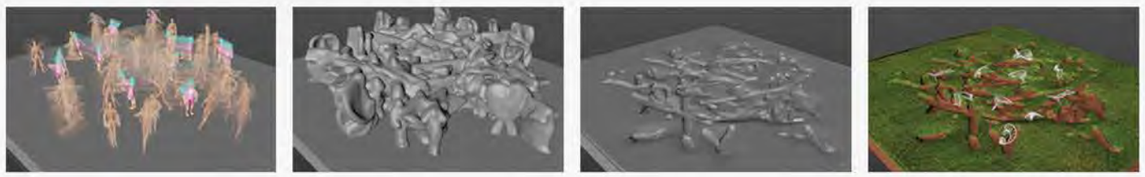
MOTION PLAYGROUND

The playground is divided into 3 layers of motion - terrain, playground elements and play. The bottom layers are generated with motion to accomodate the top one.



The playground elements are generated by tracing the trajectory of specific parts of the body, while engaging in a variery of games and playful activities.

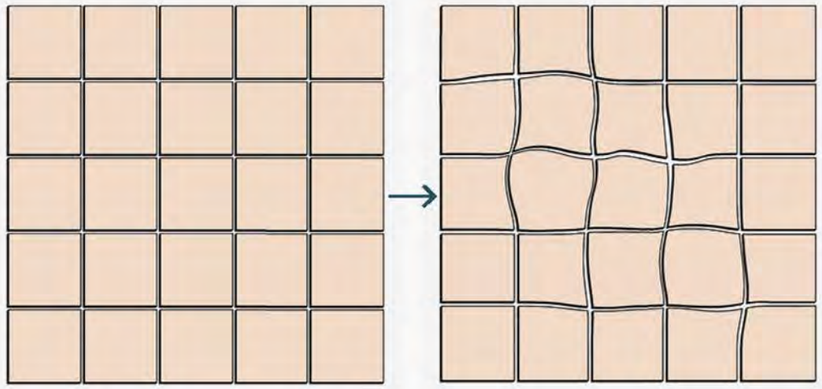
Using this method, a series of playground elements were created and distributed across the motion-driven terrain, which is designed using a trace of multiple motion sequences, scaled up and carving into the ground.



THE CLASSROOM

A DIFFERENT KIND OF MOTION CAPTURE

To integrate movement into the free wall surfaces of the classrom, a scribble motion is tracked using a digital graphic pen.

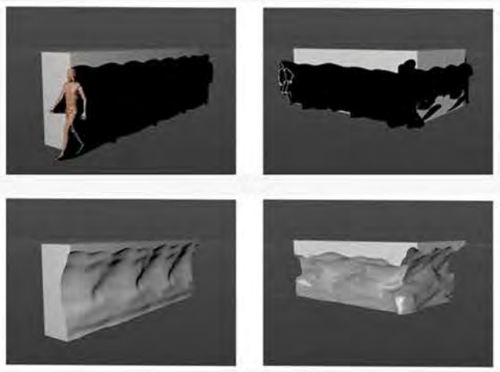


The scribble is used to deform a grid, into an implied motion pattern.

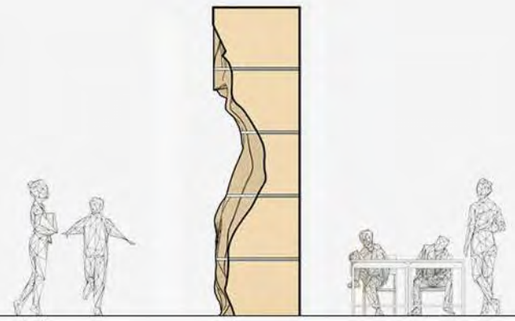
KINESTHETIC WALL

MAPPING MOTION ONTO A SURFACE

Different parts of the school accommodate different types of activities. The walls are generated in accordance with the amplitude of motion which the space hosts.



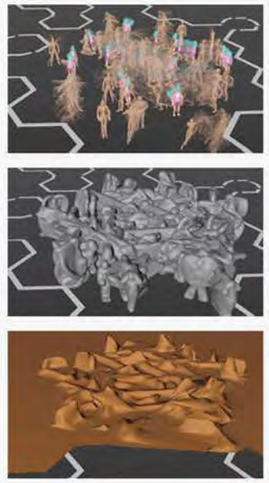
The wall geometry is generated by tracing and enhancing human movement through space, and using it to carve into the wall.



THE MAIN HALL

THE CEILING

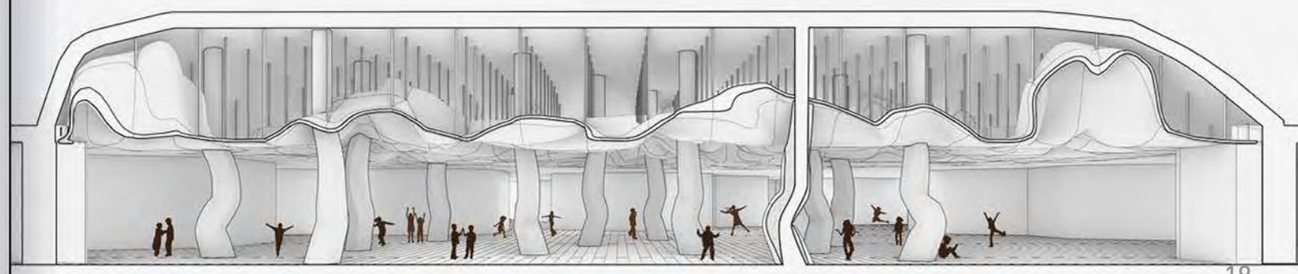
The ceiling is generated by superimposing a variety of digitally captured, playful motion sequences, which are used to shape the surface.



THE COLUMNS

A basic column geometry is rigged into a digital human skeleton.

Different motion sequences taken from the motion library are applied on the geometry to generate a series of dynamic columns.



project name:

ANIMISM

in collaboration with:
Tom Melloul

brief

BACHELOR GRADUATION PROJECT

year

2018-2019

abstract

As we enter the 21st century, humanity's striving for stability is being replaced by a constant desire for change and stimulation.

The built environment ironically reflects the gap between these desires, and is increasingly becoming more rigid and lifeless, a salient example of which is Netanya's Ir Yamim district. This project presents a new way of reading space through people; The city lives, adapts, and reacts to an ever-changing reality. It is dynamic and relevant, encouraging a sense of empathy between the city and its people.

ANIMISM is the birth of the living city.

contribution

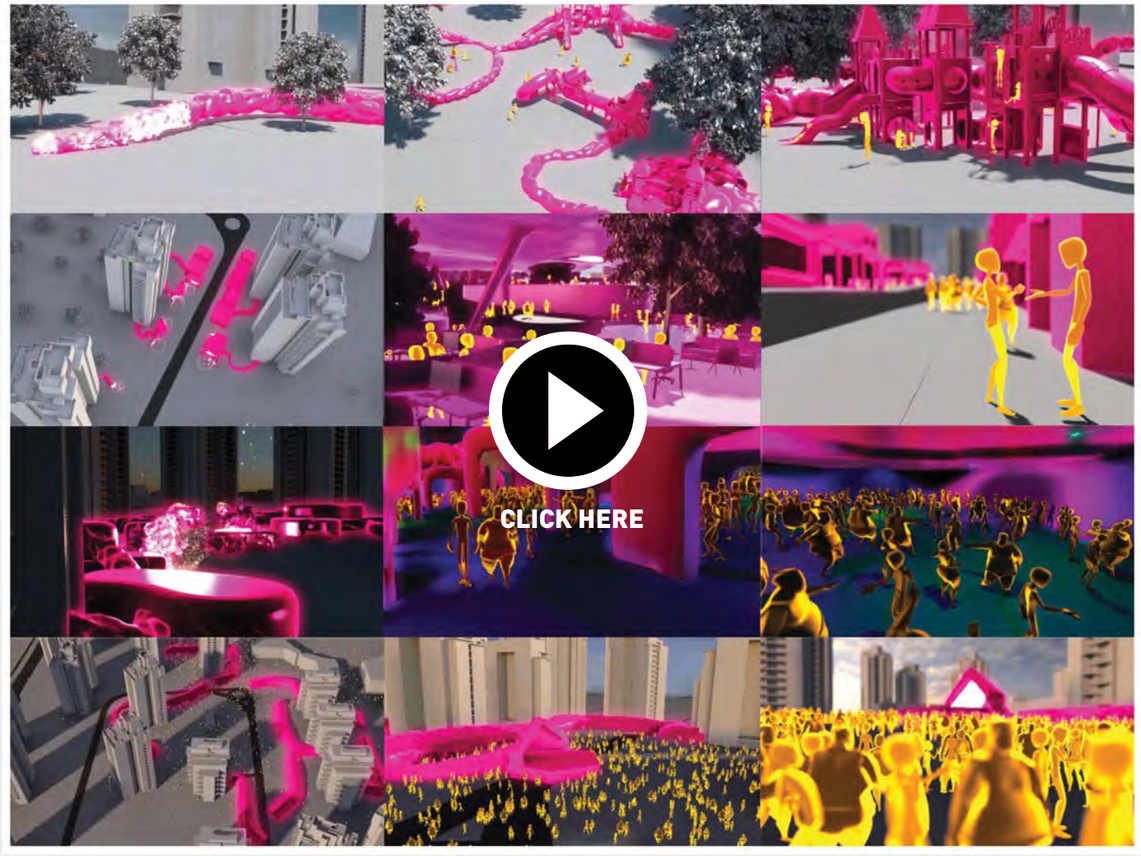
research, concept design, drafting, rendering, video editing, 3d modeling, animation design and rendering, physical modeling and 3d printing

tools

cinema 4d, octane, rhino, grasshopper, photoshop, illustrator, after-effects, 3d printing, houdini, unreal engine

institute

Azrieli School of Architecture, Tel-Aviv University



The video demonstrates some of the possible scenarios of the Living City, which changes and adapts according to the data collected from its surroundings.
We have imagined 4 of the endless possible scenarios, and made a short animation video bringing each of them to life.

to view scenarios video and more, please visit:
http://www.nitsanbartov.com/animism

ANIMISM-PEOPLE-ARCHITECTURE

Psychologist Jean Piaget has suggested in his studies of Animism in children, that a child is born with animistic tendencies, and it is modern society which supresses them.

Up to the ages 4 or 5 years, the child believes that almost **everything** is alive and has a **purpose**

In the next stage, only objects that move **spontaneously** are thought to be alive.

1-4

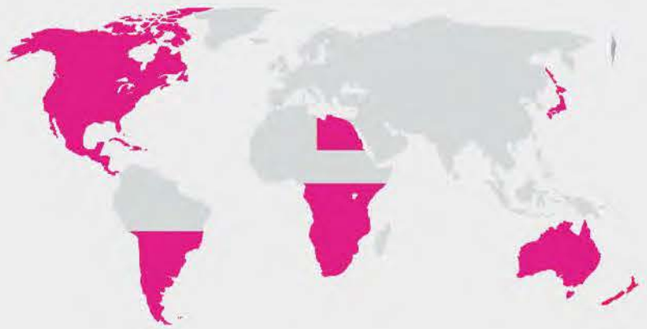
4-7

During the second stage, only objects that **move** have a purpose

7-9

9-12

In the last stage, the child understands that only **plants** and **animals** are alive



The origins of Animisn, as described by anthropologist Sir Edward Tylor, suggest that animism is 'embedded' in the human species, as it grew organically in vastly different and distant cultures.

We have detected acts of animism in architecture, and have categorized them into 5 types :

dynamisn & motion

organicness

memory

tactility

adaptive-responsiveness

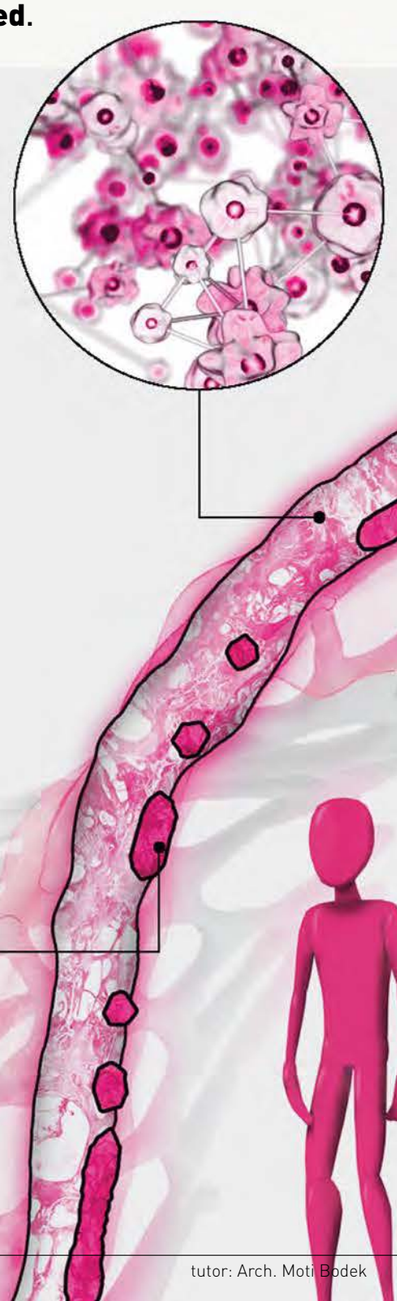
A MANIFESTO FOR THE LIVING CITY

- A 'living space' is one which **adapts** and **reacts** to an ever-changing reality.
- Future spaces must be **vitalized**. Present spaces should be **revived**.
- Architecture must aspire to become the **bridge** between lifeless spaces and the **living**.
- Living architecture can only be realized by breaking technological boundaries and by embracing **innovation** and **imagination**.
- A living city cannot be planned. It must be **nurtured**.

LIVING ARCHITECTURE

The existence of Animism in architecture have led us to investigate new methods of planning, designing and building, to provoke a sense of Animisn in the users. The search for new practical and theoretical methods of construction and planning has led us to Rachel Armstrong's "Protocell Architecture" project, on which we based the feasibility of "the living city" - bringing the sense of Animism to the urban scale.

We have decided to bring the city to life, by introducing the protocell organism into an existing urban environment.



THE SITE

For the realization of the living city, we chose the neighbourhood of "Ir-Yamim" in the city of netanya, israel. Ir-Yamim is a new neighbourhood, planned and built in the last decade, yet it possesses most of the traits of static, "dead" urbanism according to our theory of animism in architecture - it lacks organicness up to the level of fake grass and plants-behind-fences, it does not encourage pedestrian movement, it is 'un-tactile' and is paved with cold, static materials, it lacks the potential to change and adapt over time - and while surrounded by memories of the old city and the natural reservoir, ir-yamim provides no memory of its own.

URBAN ANALYSIS OF IR-YAMIM

based on the principles set by Kevin Lynch, "The Image of the City" (1960)

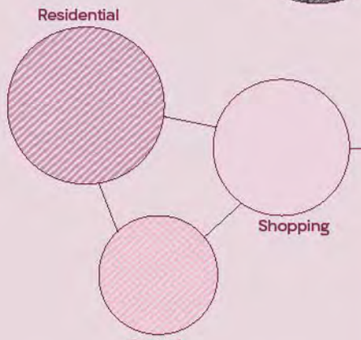
A multitude of "landmarks". A lack of identity

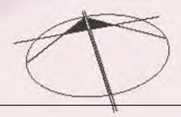
Roundabouts

Intersections

Multiples paths for pedestrians. No streets.

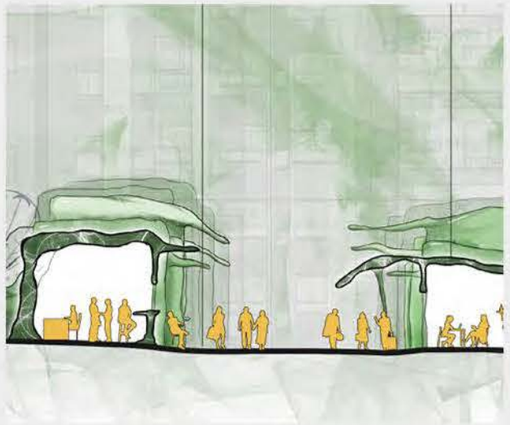
High walls surround each compound, no access



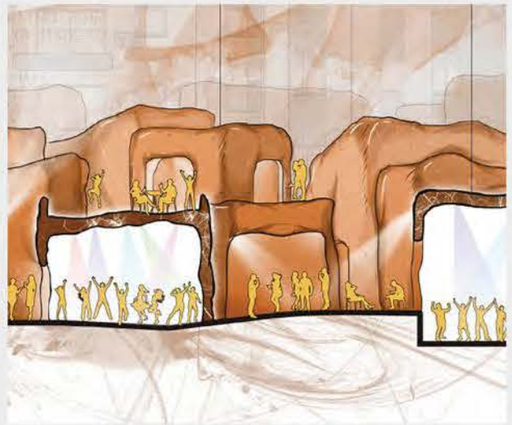


IR YAMIM

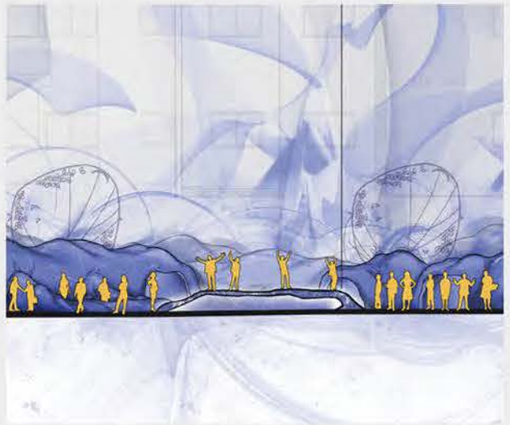
0m 100m 200m



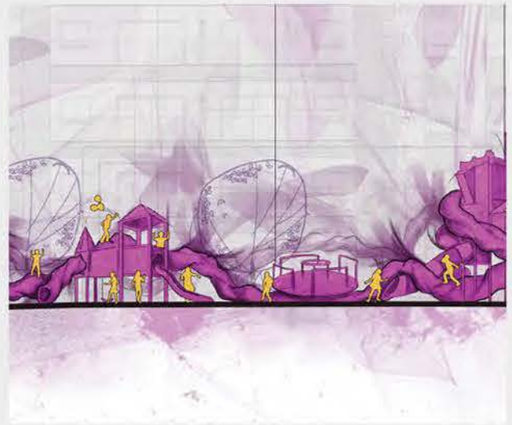
WORK - early morning, people of the city leave their homes and head to work, the organism paves their roads with activities and programs, as well as forming large working spaces, suitable for the work of the future



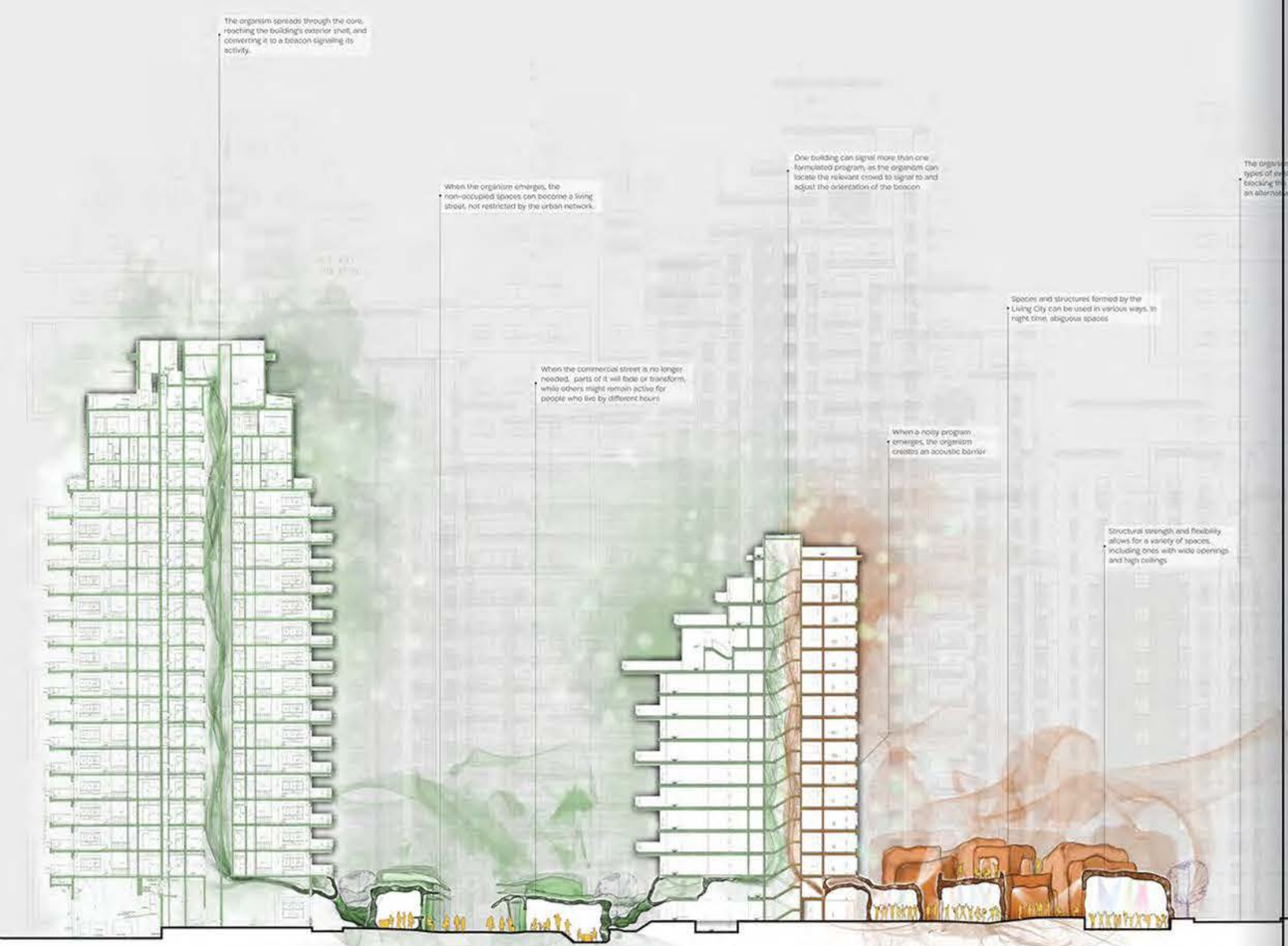
PARTY - late at night, when people are eager to let loose, meet and interact - the organism forms the best party zone in town in the voids between the masses, while isolating the residents above from the noise

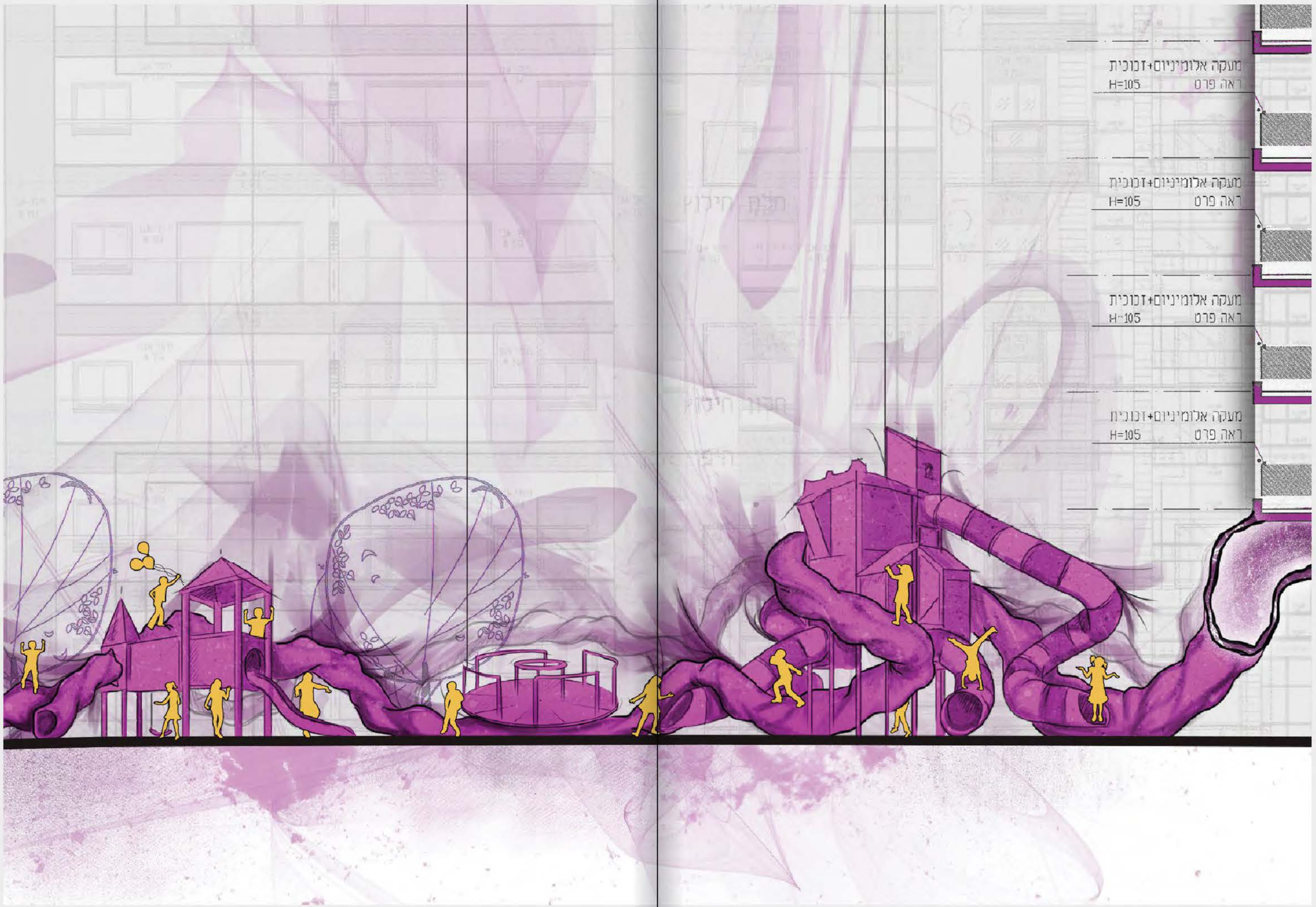


GATHER - political protest, music event, public holiday - people tend to gather in urban environments. the organism senses gatherings and forms an ideal, enclosed space for the ultimate temporary program



PLAY - It is afternoon, a large amount of children arrive at the city from school. the organism senses their energy and desire for play-space, and uses empty spaces between the buildings to form temporary playgrounds




מעקה אלומיניום+זכוכית
H=105 ראה פרט
מעקה אלומיניום+זכוכית
H=105 ראה פרט
מעקה אלומיניום+זכוכית
H=105 ראה פרט
מעקה אלומיניום+זכוכית
H=105 ראה פרט
מעקה אלומיניום+זכוכית
H=105 ראה פרט

project name:

HANDS-ON

brief

1st YEAR MASTER'S PROJECT

year

2020-2021

abstract

"Hands-on" is a design research project, exploring the possibilities of a hybrid design process, involving hand-sculpting, computational design and digital fabrication. In an attempt to create an architecture that allows people to develop a sense of empathy and embodiment, the traces (or fingerprints) of the manual, human processes used for its design remain in the final product, while the advantages of digital modeling were also utilized in ways which leave physical traces.

The developed process was used to design and fabricate architectural scale elements.

tools

clay 3d printing, cinema 4d, octane, rhino, grasshopper, photoshop, illustrator, after-effects

institute

Computation in Architecture, The Royal Danish Academy

A HYBRID DESIGN PROCESS

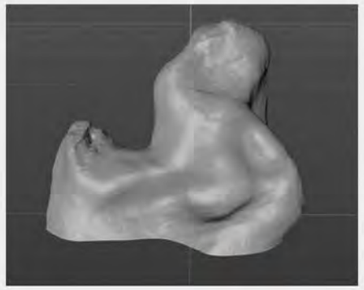
The design process is divided into 4 phases, each leaving its own unique fingerprint on the final product. The process can be re-assessed and iterated in constant feedback, as the scanned model can be alternated over and over.

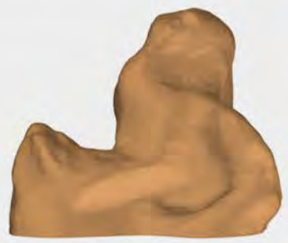
PHASE 1 - HAND SCULPTING

The design process starts with a hand-crafted clay model, combining program with intuition

PHASE 2 - DIGITIZATION

The models is scanned in 3d to form a digital mesh

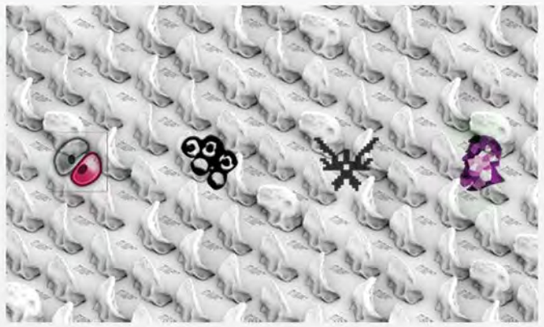


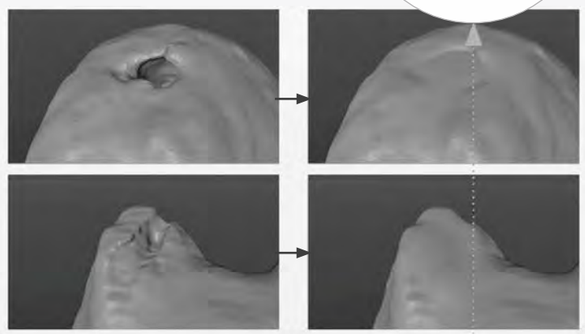


for the scanning process, a kinect sensor was used, together with a self-designed digital turntable

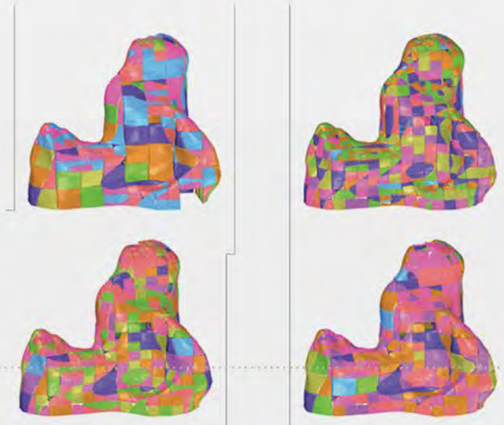
PHASE 3 - COMPUTATION

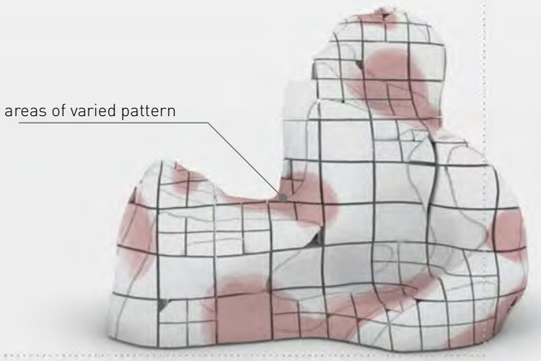
The scanned model can be digitally fixed, manipulated, iterated and optimized, both aesthetically and functionally





The model is then discretized into printable-sized elements using an algorithm based on fabrication logic

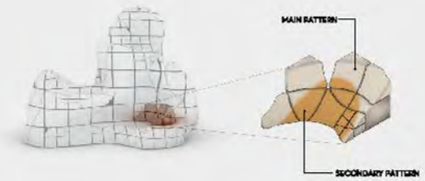




PHASE 4 - FABRICATION

The final elements are 3d printed in clay.

different algorithmic approaches generate a variety of possible textures



different textures are mapped onto the elements

INTRIGUING ARCHITECTURAL ELEMENTS

Using the hybrid design process, architectural elements could be designed to embrace the fingertips of the processes used to design and fabricate them, and allow for a sense of familiarity and embodiment.

project name:

EAAA

in collaboration with:
Tom Melloul, Rotem Arad

ELIFELET ACADEMY OF APPLIED ARTS

brief

MIXED-USE PROJECT

year

2018

abstract

The light-train plan of Tel-Aviv will have a massive impact on urban life in the center of Israel, and the planned stations hold an opportunity to become urban generators and focal points.

Elifelet Station lies in a strategic location between some of the most characterized neighborhoods in Tel-Aviv, yet it remained untouched to this day and became a "no-man's land".

EAAA - Elifelet Academy of Applied Arts, is an academic center which is fully integrated with the street, the station and the surroundings. It engages the street level with commercial and cultural programs, and allow residential solutions on the roof.

contribution

Reasearch, concept design, drafting, rendering, video editing, 3d modeling, animation design and

tools

autocad, rhino, grasshopper, photoshop, illustrator, after-effects, 3d printing, houdini, unreal engine

ELIFELET ACADEMY
EAAA of APPLIED ARTS

institute

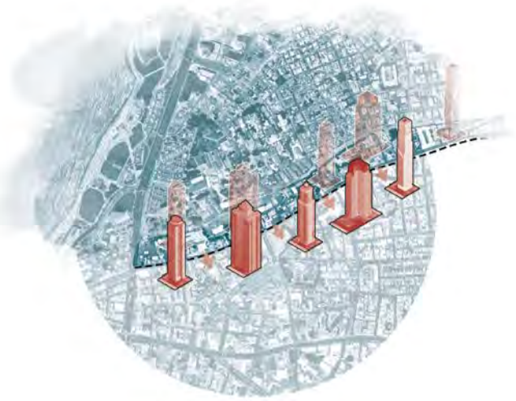
Azrieli School of Architecture, Tel-Aviv University

this project materials include a video. please visit:
http://www.nitsanbartov.com/eaaa/

URBAN STRATEGY

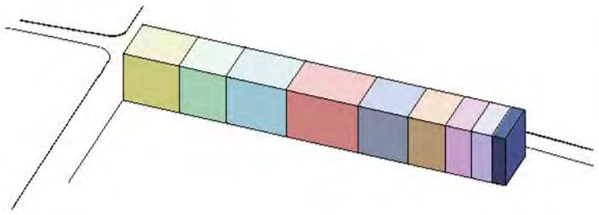
The site's geoxraphic, demographic and historical contexts were mapped and studies to assist in planning the site's program and geometry

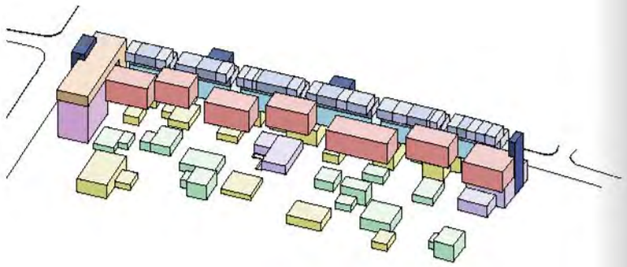
The currently active plan for the site was not disregarded - an alternative urban plan was proposed in which the high-rise line is diverted south but are still built



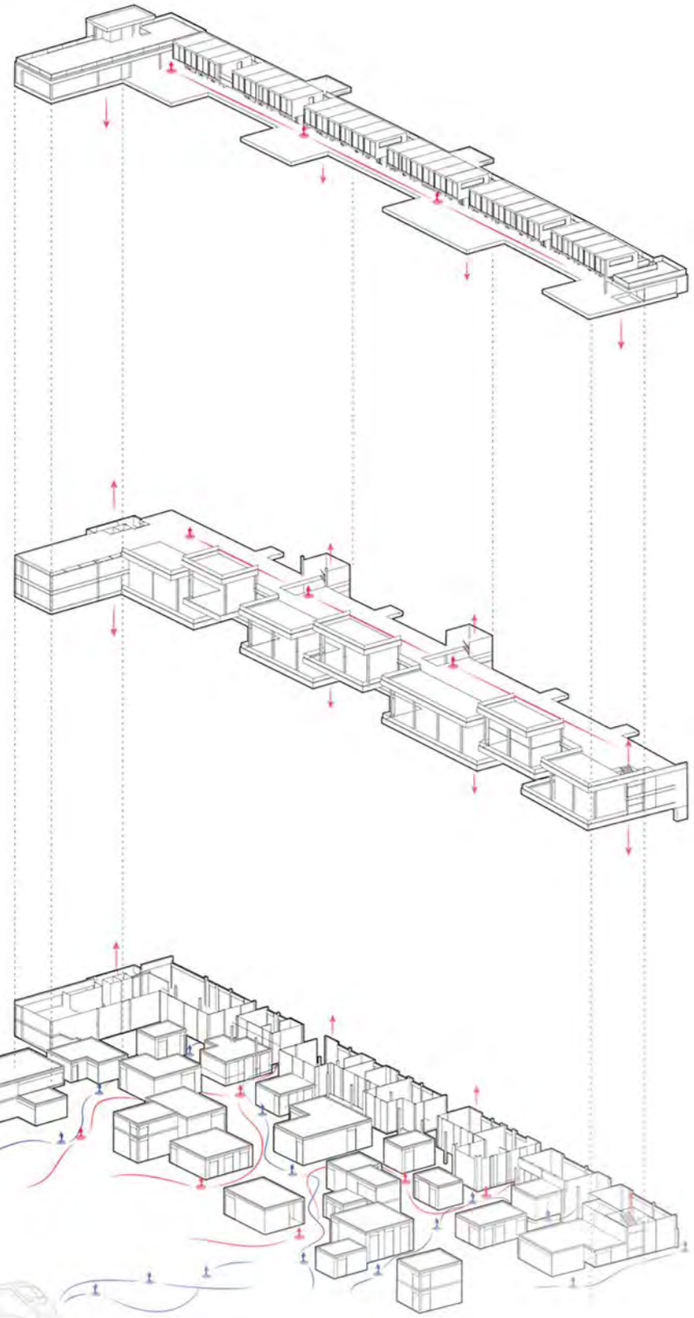
PROGRAM

EAAA consists of a mixture of programs, distributed in space to support eachother and provide a lively urban environment for the city and for the students





commercial galleries classes studios residence leisure offices shared cores



STUDENT'S VILLAGE

The top floor is a student's village; it consists of small, affordable residential units and shared leisure spaces

ACADEMY

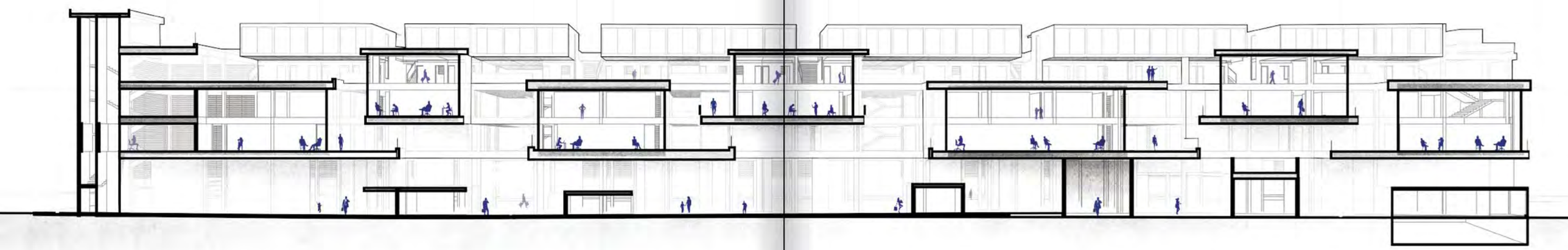
The middle floors are the academy; it holds the studios, management rooms and shared facilities

COMMERCIAL\PUBLIC

The ground floor is a penetrable commercial street facade, which can be penetrated through passages to a public pavilion garden for students' exhibitions and small businesses

EAST-WEST SECTION

The section shows the relationship between the academy and the public pavilion garden. It allows a balance between the privacy needed for studying and the intercation needed for inspiration. The symbiosis between the public and the academy makes for better artists, and a better city.



project name:

UMAGUTI

in collaboration with:
Tom Melloul, Yagev Langer

brief

EXTREME ENVIRONMENT PROJECT

* Studio taken as a part of the "Azrieli Global Studio" program, in collaboration with McGill University and the Technion

year

2017

abstract

Northern sub-arctic Canada is abundant with minerals, the main one being Iron Ore. For years the Canadian government have allowed an almost unregulated mining industry, leaving the ground deeply wounded and the local communities struggling.

UMAGUTI, the Innu word for "Everything Needed for Life", offers to use the existing terrace topography of abandoned mines to inhabit a sustainable arctic-farm, with a visitor's center and research facilities, and allow the local communities to grow, develop and prosper through the healed wounds.

contribution

research, concept design, planning, drafting, rendering, drawing, solar and environmental simulation, form-finding

tools

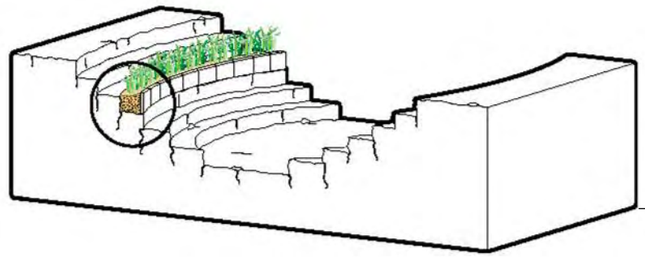
rhino, grasshopper, ladybug, kangaroo, 3ds max, photoshop, v-ray, illustrator, after-effects, 3d printing

institute

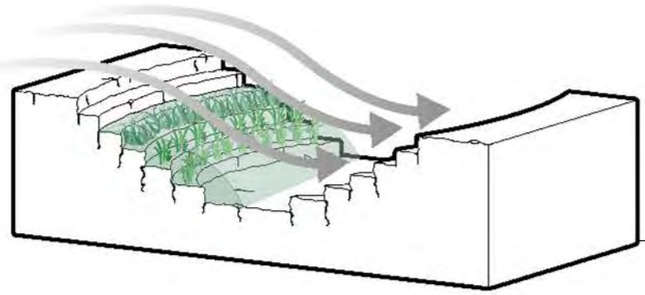
Azrieli School of Architecture, Tel-Aviv University
In collaboration with McGill University, Montréal

SUB-ARCTIC URBAN FARM

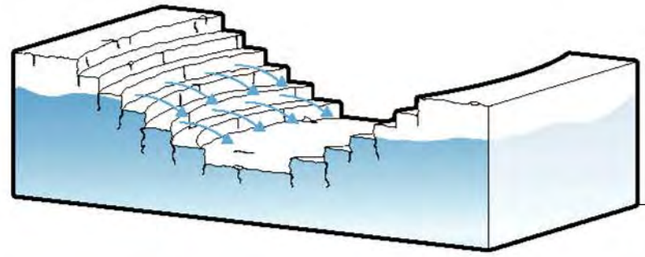
Studies show that edible agriculture in sub-arctic climate is possible most of the year, so we have decided to use the 'natural' form of the abandoned mines as agricultppural terraces, and integrate residential areas with research and tourist facilites to allow a flourishing communities which can provide the entire area with fresh food



the existing terraces can be covered with aminimal amount of fertile land for the plants to grow on

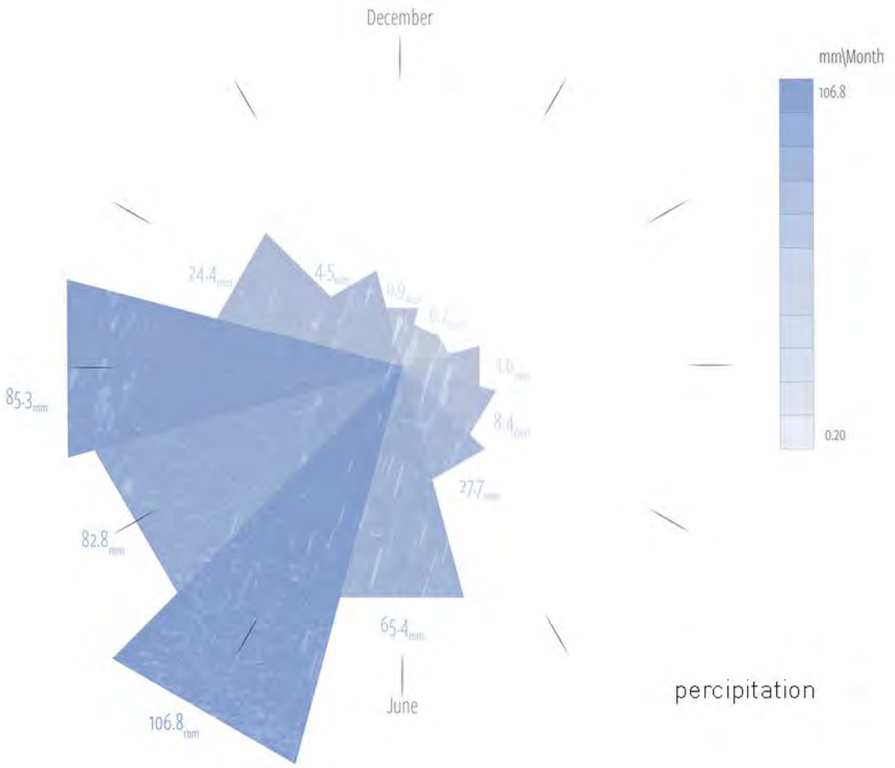


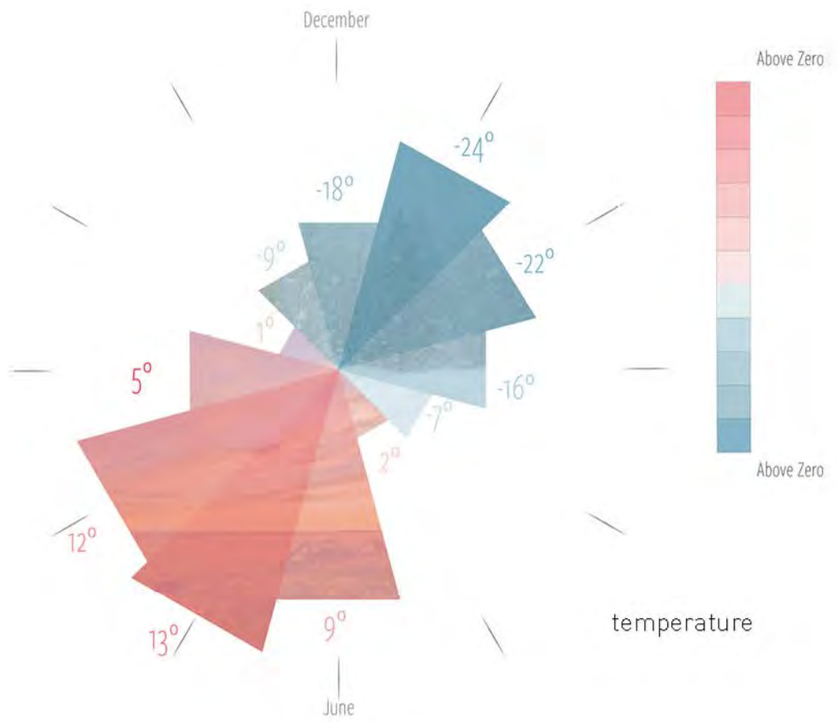
the shape of the terrace can protect the vegetation from strong winds and frosts

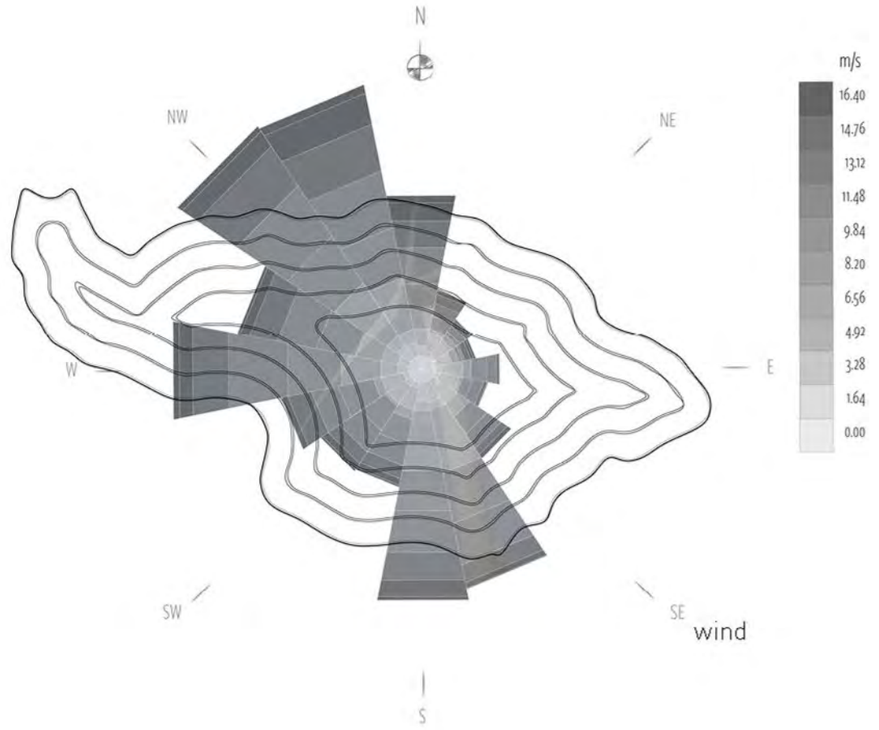


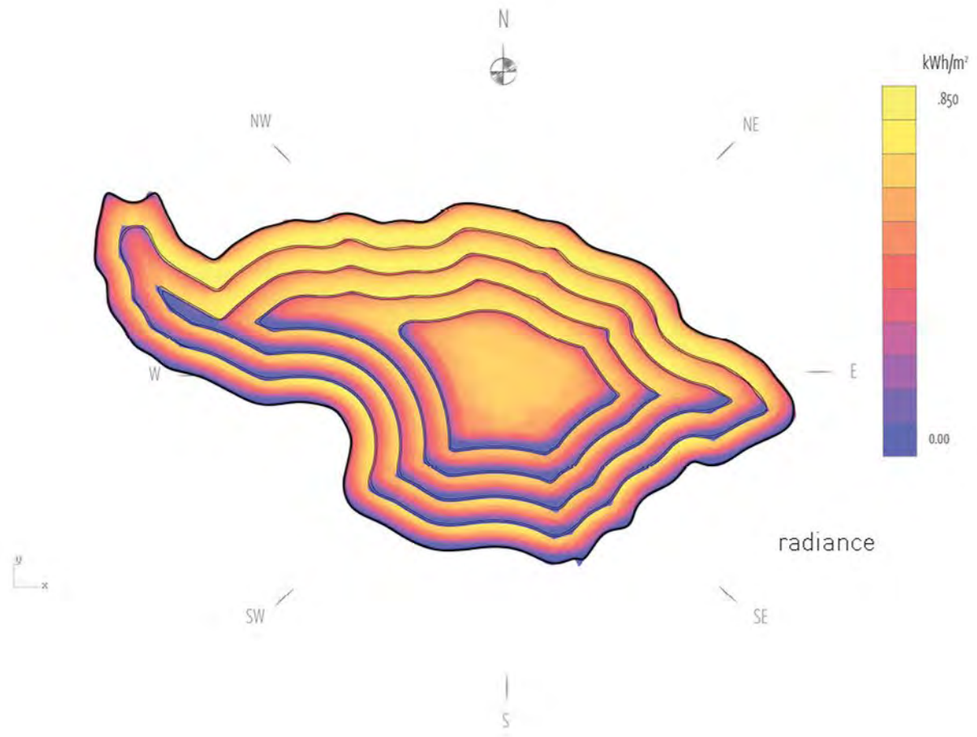
the mine is deep enough to reach the groundwater level, which can be used for watering and consumption

Site analysis using computational climate-modeling techniques
helped determine the mine's master-plan and character.

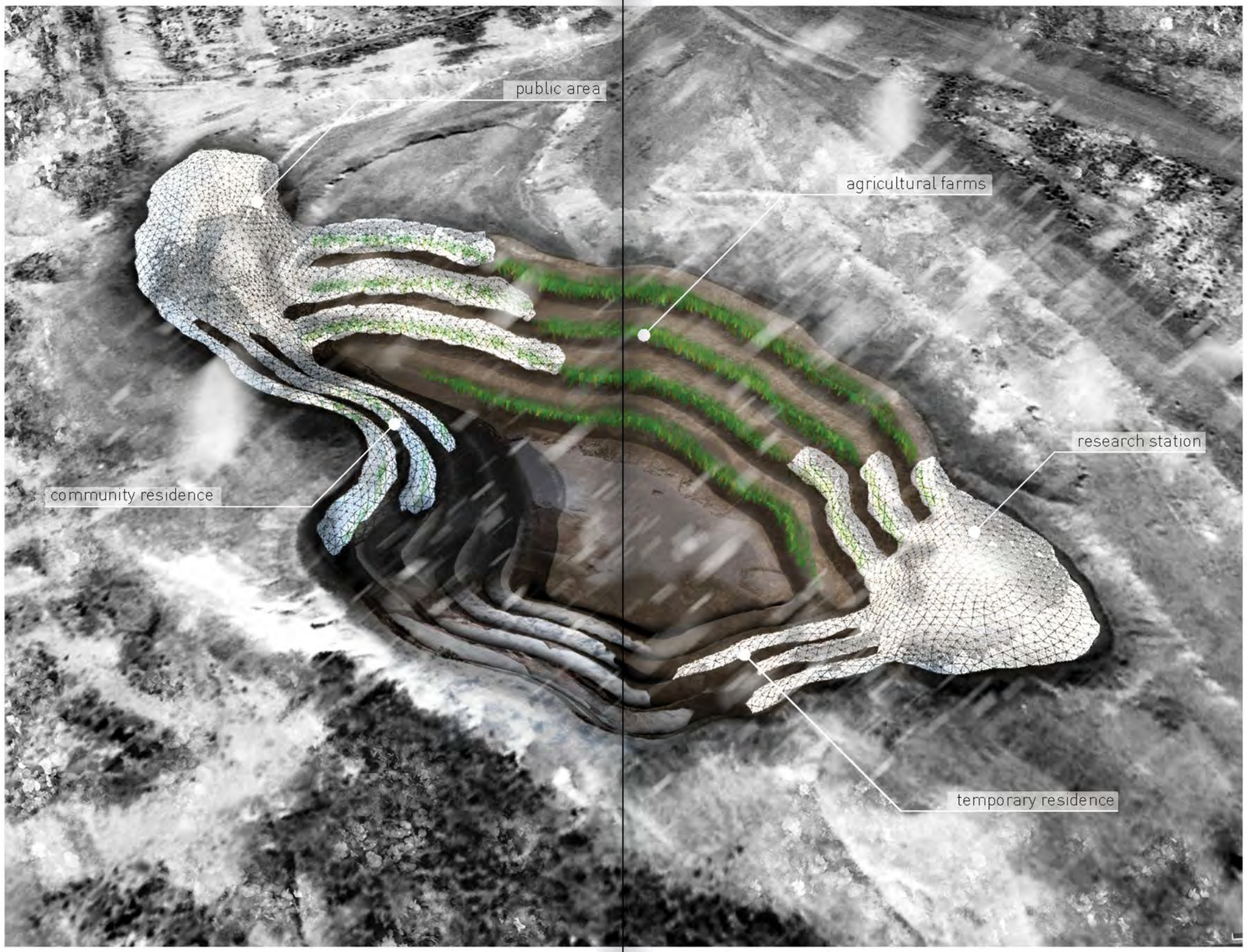








Aerial render of the new flourishing mine, including residence, sub-arctic agriculture, research stations and tourist attractions



project name:

WENDY

in collaboration with:
Tom Melloul, Lealla Solomon, Yaron Zakay

brief

DIGITAL STUDIO INSTALLATION

year

2017

abstract

The concept of WENDY was born in a studio trip to Tokyo, Japan.

WENDY is an interactive vending machine that allows people to get inside of it, interact with it, get to know it, and come out as the product of their own personal encounter.

contribution

research, concept design, arduino programming and sensor assembly, video mapping, video editing, graphic design, installation design and construction

tools

rhino, grasshopper, photoshop, illustrator, arduino, VVVV, after effects, laser-cutting

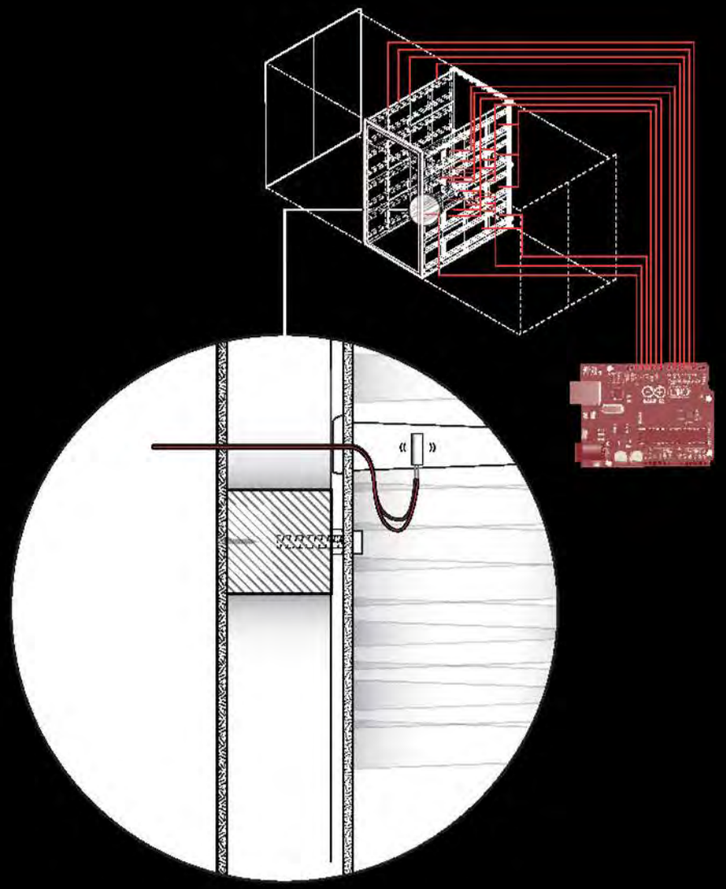
institute

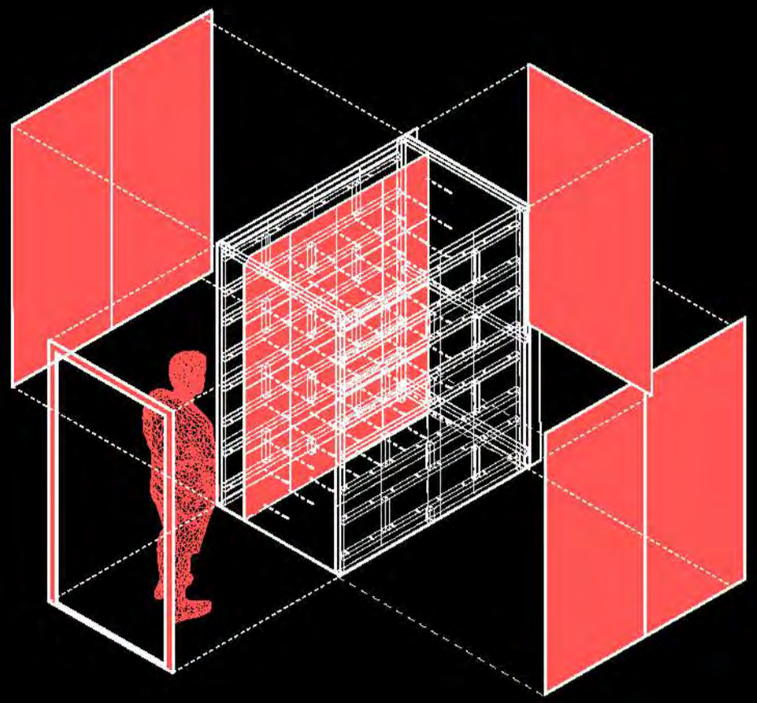
Azrieli School of Architecture, Tel-Aviv University

this project consists **only** of a video. please visit:
http://www.nitsanbartov.com/wendy/

WENDY

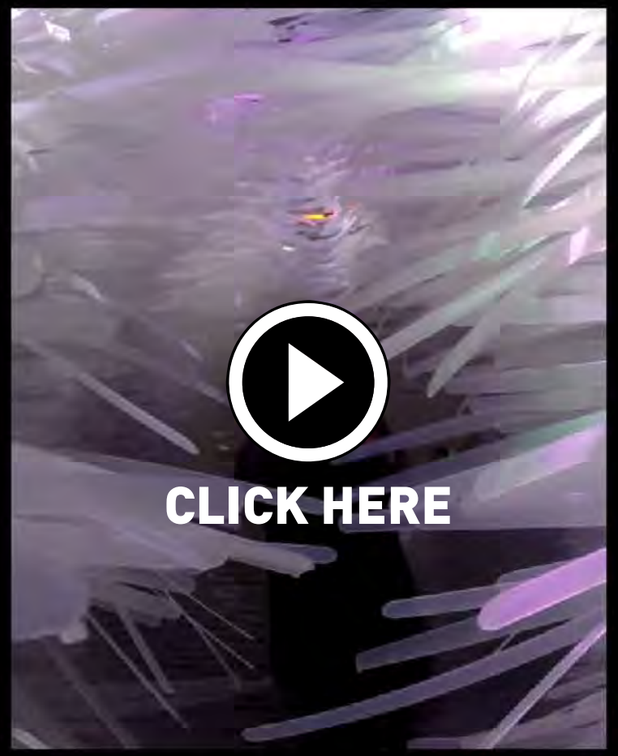
WENDY is a 1:1 vending machine. It is made of 60 tilt sensors wired to an arduino board, placed carefully to sense the movement of over 12,000 polypropilene parts, which in turn make up the internals of the machine.





THE LIVING VENDING MACHINE

Any subject can enter WENDY. inside, different interactions trigger a variety of reactions and responses from the machine, so that the subject can interact with it, and thus break the western axiom of the distinction/relationship between subject and object.



project name:

POROUS ECOLOGIES

brief

URBAN STUDIO

year

2016

abstract

POROUS ECOLOGIES focuses on urban infrastructure as a generator for development. By laying out and designing infrastructural plans and ideas in the fields of Water, Mobility, Logistics and Waste, we have used advanced generative tools and a deep understanding of urban ideologies from the past and the present to suggest possible scenarios for the development of Fisherman's Bend, a historic industrial area in the heart of Melbourne, Australia.

contribution

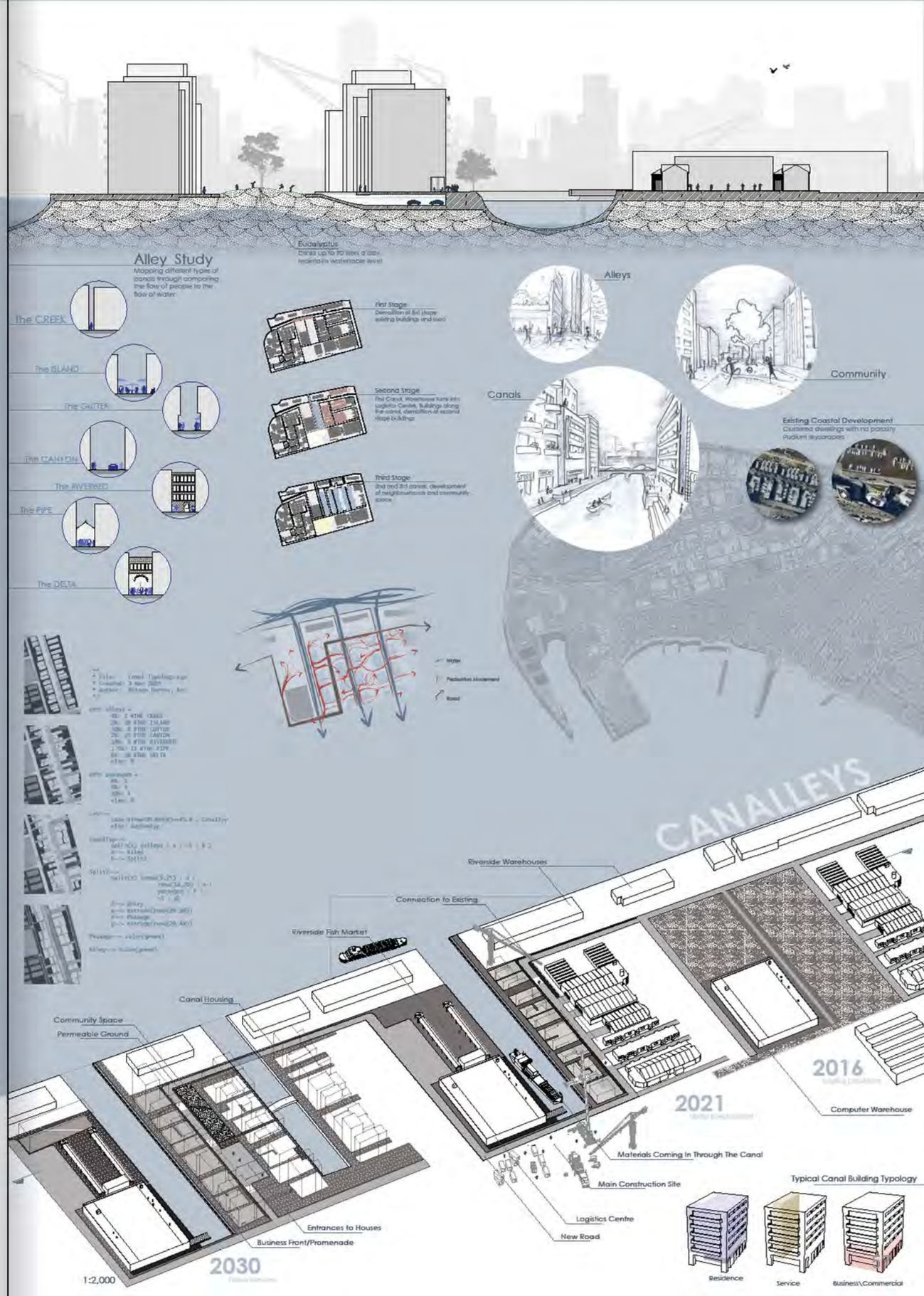
solo project within a group site. site analysis, research, concept design, planning, drafting, rendering, drawing, coding and generative simulations, 3d modeling

tools

city engine, qgis, rhino, grasshopper, photoshop, v-ray, illustrator, 3d printing, drawing

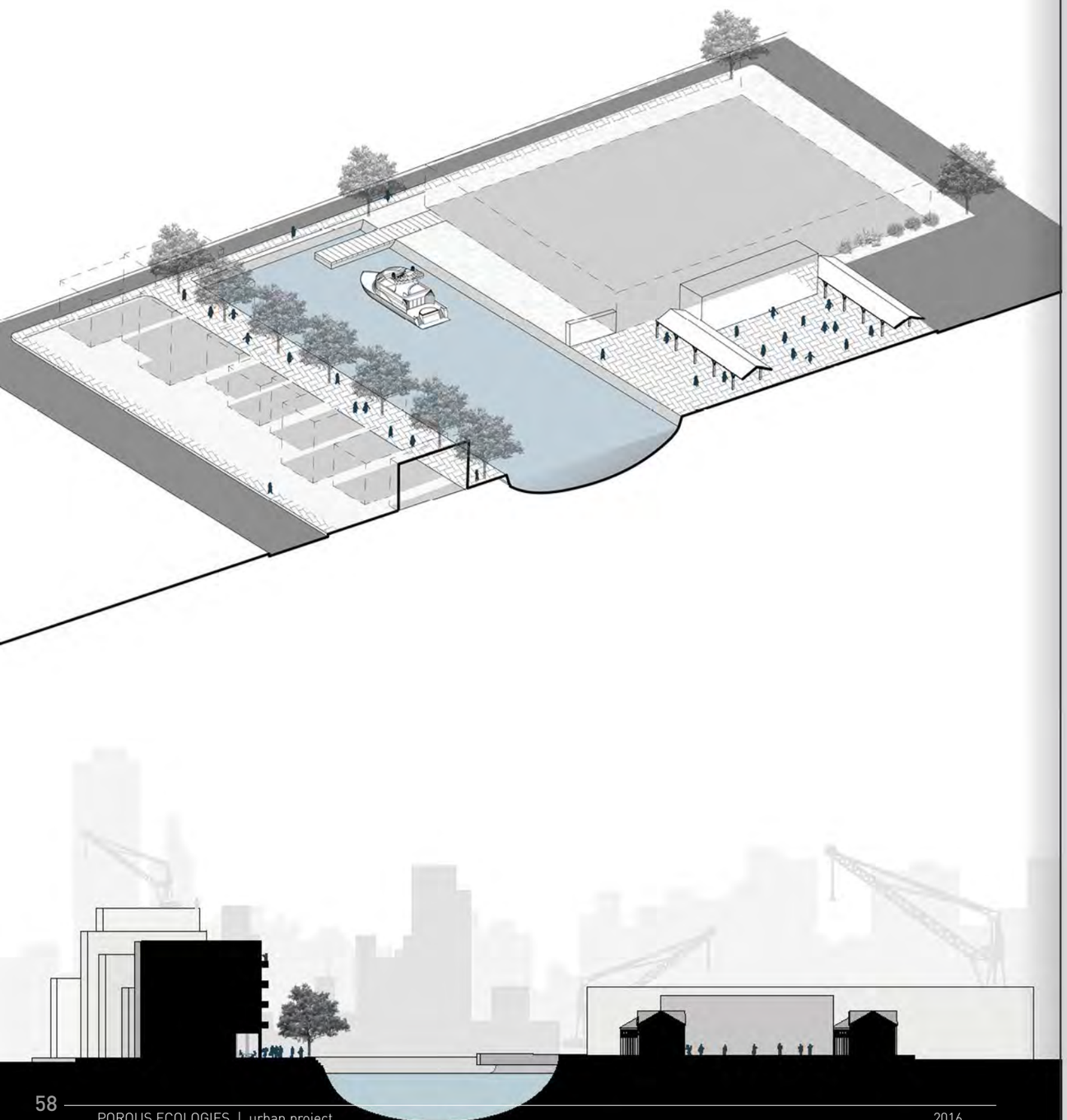
institute

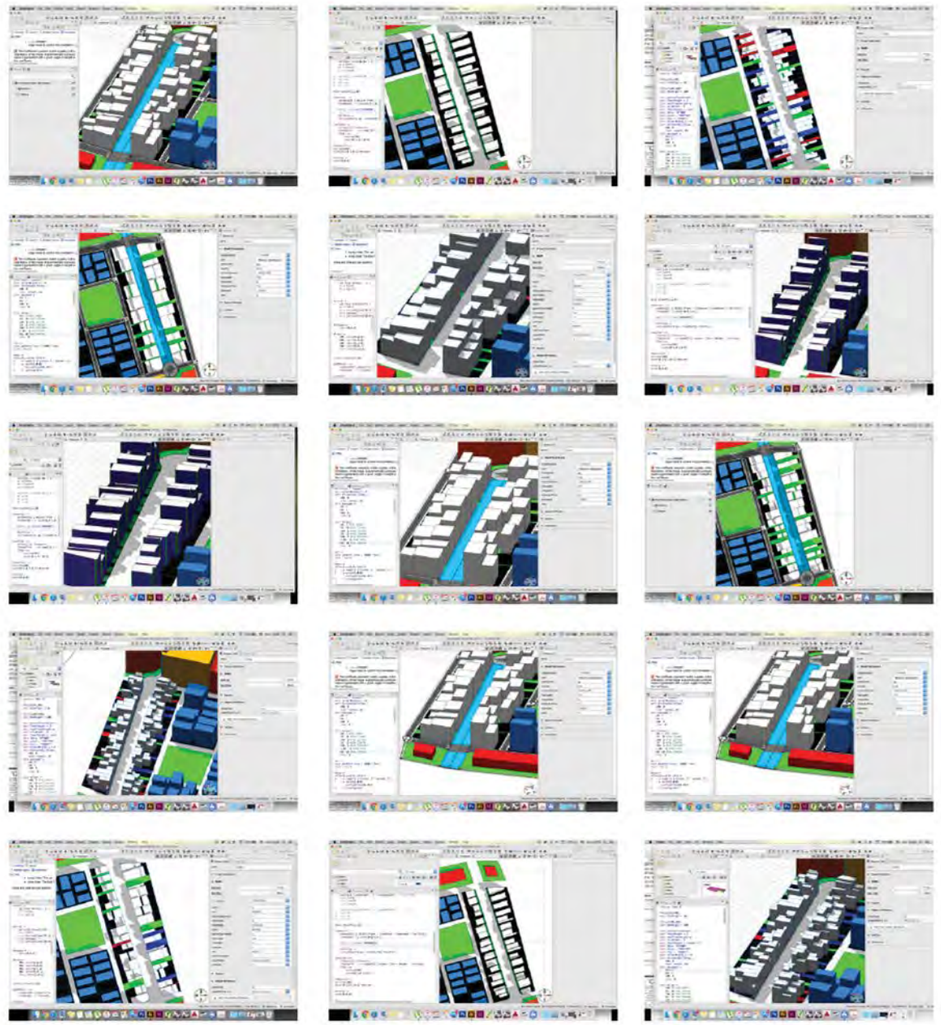
Monash University. Melbourne



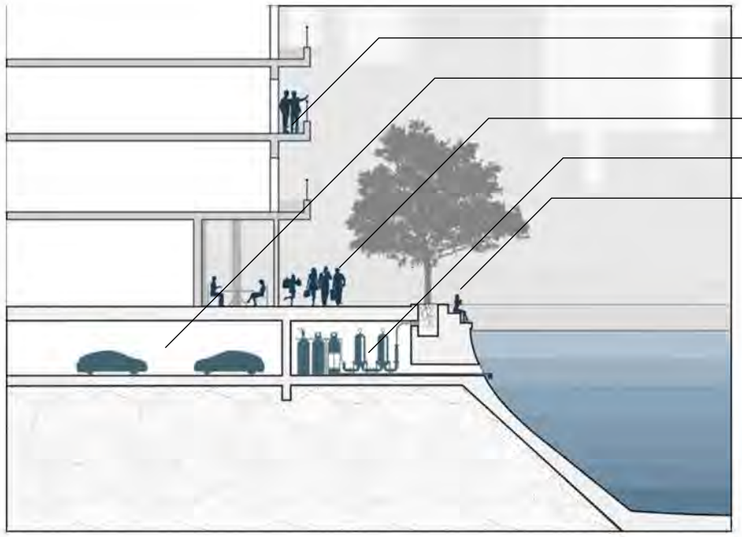
ARTIFICIAL CANALS AS URBAN GENERATORS

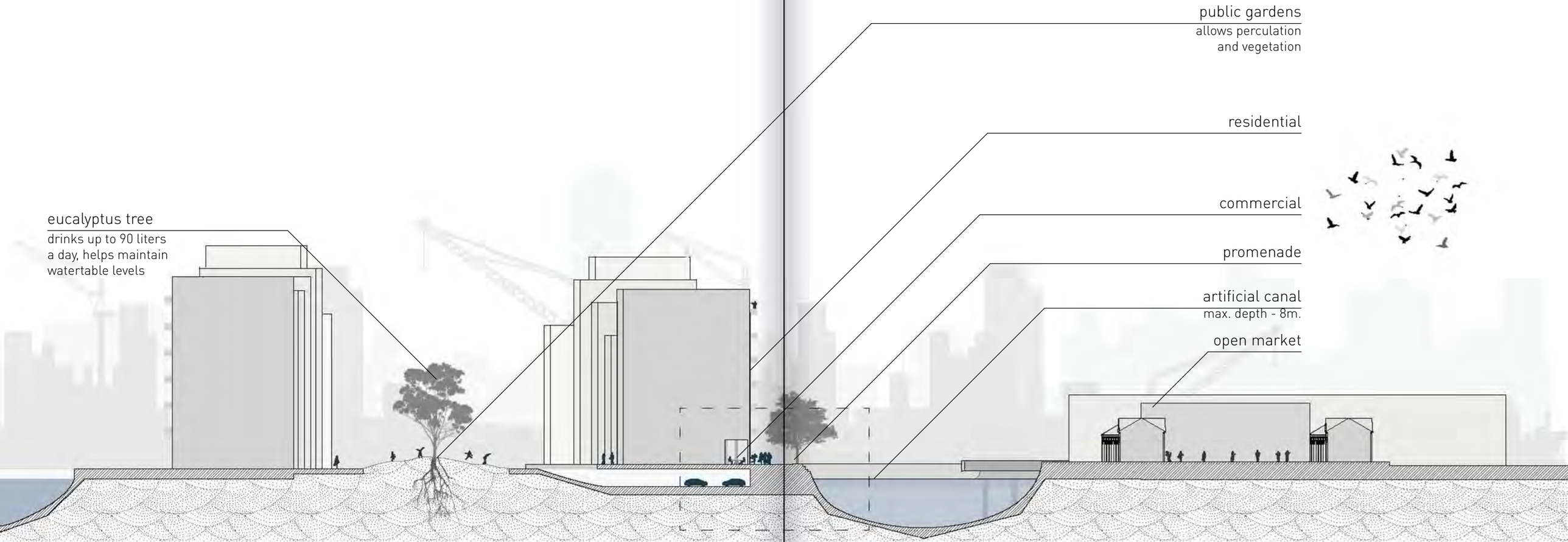
The project suggests the introduction of artificial canals into the city. used differently over the process of development in the area. The canals are used to transfer construction supplies to the site, and are later the core of a commercial promenade along them, as well as the seperators and space organizers of the future urban area





ESRI CityEngine is a code-based platform for building and visualising urban landscapes, using a unique scripting language. The software was used to assess and evaluate scenarios of different regulations regarding the introduction of artificial canals, allowing for a quick visual and numerical feedback of large urban scenes.


balconies
parking
promenade
water treatment
plant watering system


public gardens
allows perculation
and vegetation
residential
commercial
promenade
artificial canal
max. depth - 8m.
open market
eucalyptus tree
drinks up to 90 liters
a day, helps maintain
watertable levels

research

project name:

THE DEVELOPED SURFACE:

CRITICAL METHODS FOR ARCHITECTURAL DESIGN USING 3D PRINTED CLAY - PHD THESIS BY **SUZI PAIN**

position

RESEARCH ASSISTANT

institute

THE ROYAL DANISH ACADEMY - IBD

working period

2021-2022

project description

This project develops new design methodologies for architects using digital tools with 3D printed ceramics as the primary case. The project focuses on the artistic aspects of an architect's practice using a 'Research by Design' methodology and the genre of 'poetics' as a way to approach the written aspects of the work. A series of practice-based research experiments are conducted in the form of 3D printed ceramic columns that are designed using experimental hybrid methods.

tools

rhino 3d, grasshopper, python, WASP clay printer

contribution

development of parametric approach and tools, generation of print files and tool-paths, conceptual development, material preperation, printing and fabrication, assistance in teaching and pedagogical applications

Print process. The cladding consists of an internal, structural geometry, designed for mono-material interlocking and structural integrity of the clay, and an external geometry, making for the ornamental surface and expressing the properties of both the material and the fabrication technique. Matching pieces are printed simultaneously, to allow for coordinated shrinkage.

The project displayed at the Ny Carlsberg Glyptotek, 2021

The project experiments with advanced fabrication of ceramic cladding for structural columns. By exploring parametric approaches with ornamental expressions, a series of cladded columns were designed, showcasing different approaches to practical (interlocking technique, structure, stability) and ornamental expressions of the designed system.

The project displayed at the International Conference of Structure and Architecture in Aalborg, 2022
During the conference, the following papers were published and presented:

- *Textile Column: Drawing and weaving with 3D printed clay*
- *How to dress a column: An architect's method for designing with 3D printed clay*

project name:

VISUALISING CHANGE

A CHAINED MACHINE LEARNING APPROACH TO MOTIVATE RETRO- CLADDING OF RESIDENTIAL BUILDINGS

position

RESEARCH ASSISTANT

institute

CITA - CENTRE FOR INFORMATION TECHNOLOGY IN ARCHITECTURE

working period

2021-2022

project description

This research investigates how a novel approach to visualisation could help address the challenge of motivating residential retrofitting. Emerging retrofitting research and practice emphasises retro-cladding - the upgrading of the exterior facade of a building - using a modular approach. We present a machine-learning based approach aimed to motivate residential retrofitting through the generation of images and cost/benefit information describing climatically specific additions of external insulation and green roof panels to the façade of a Danish type house.
The research's approach chains a series of different models together, and implements a method for the controlled navigation of the principle generative styleGAN model. The full paper was published in eCAADe 2021.

tools

rhino 3d, grasshopper, ladybug, honeybee, v-ray, python, google colab, after effects

contribution

generation of database for machine learning, rendering, thermal analysis, video editing and animation

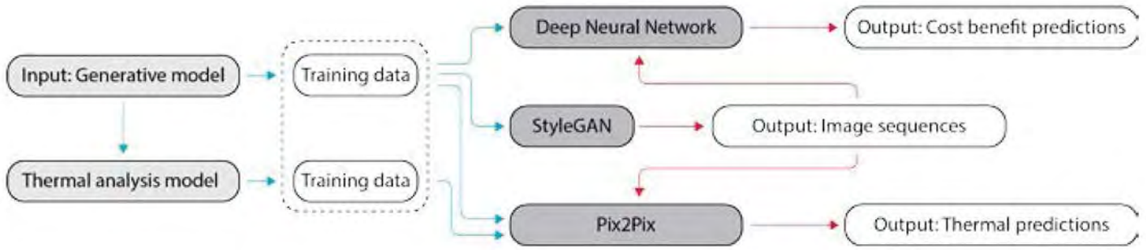
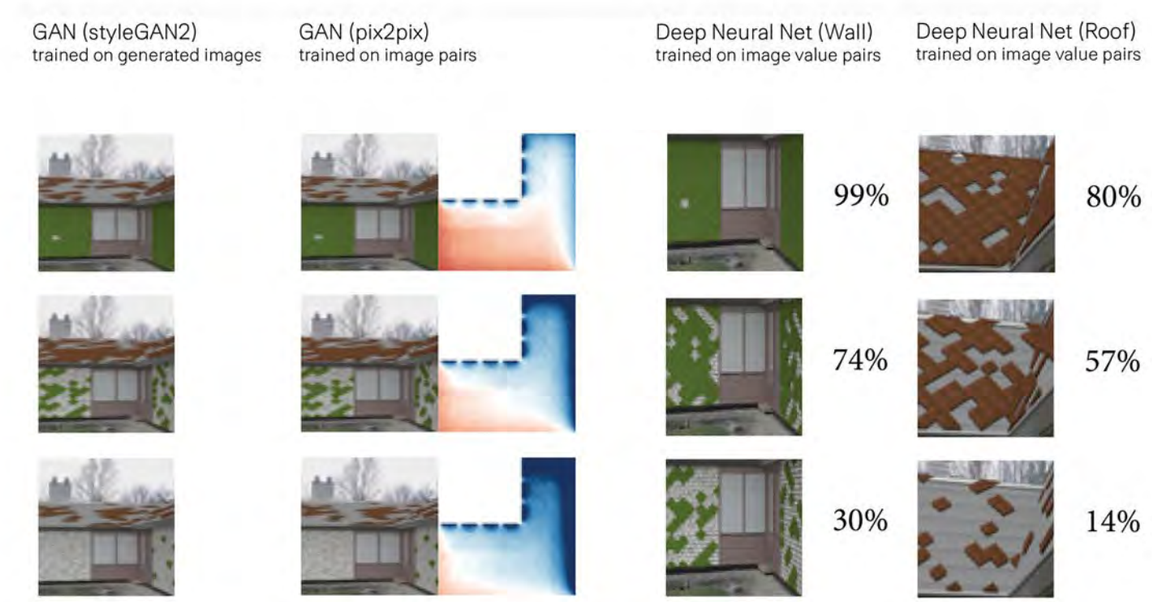
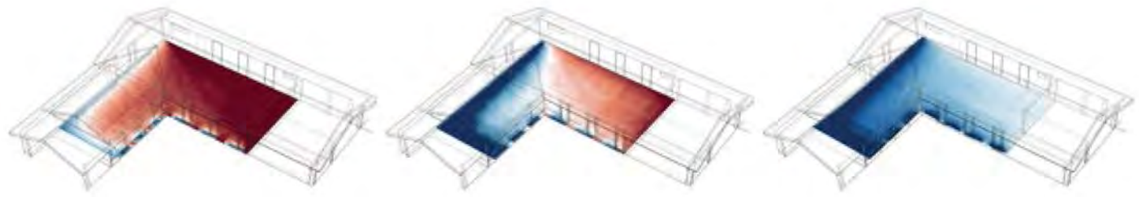


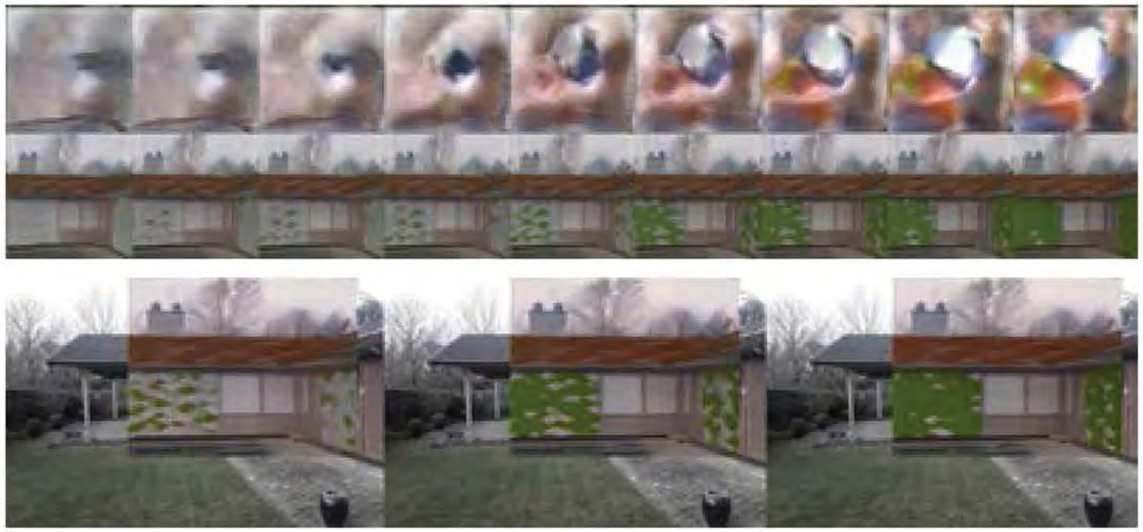
Figure showing chanining of ML models with the same synthetic dataset





Generating iterations of wall and roof panelling and pairing with respective thermal simulations

Different variables in retro-cladding of the roof and the walls, are visualised using parametric tools based on existing and novel materials and methods, represented on top of a standard residential house.

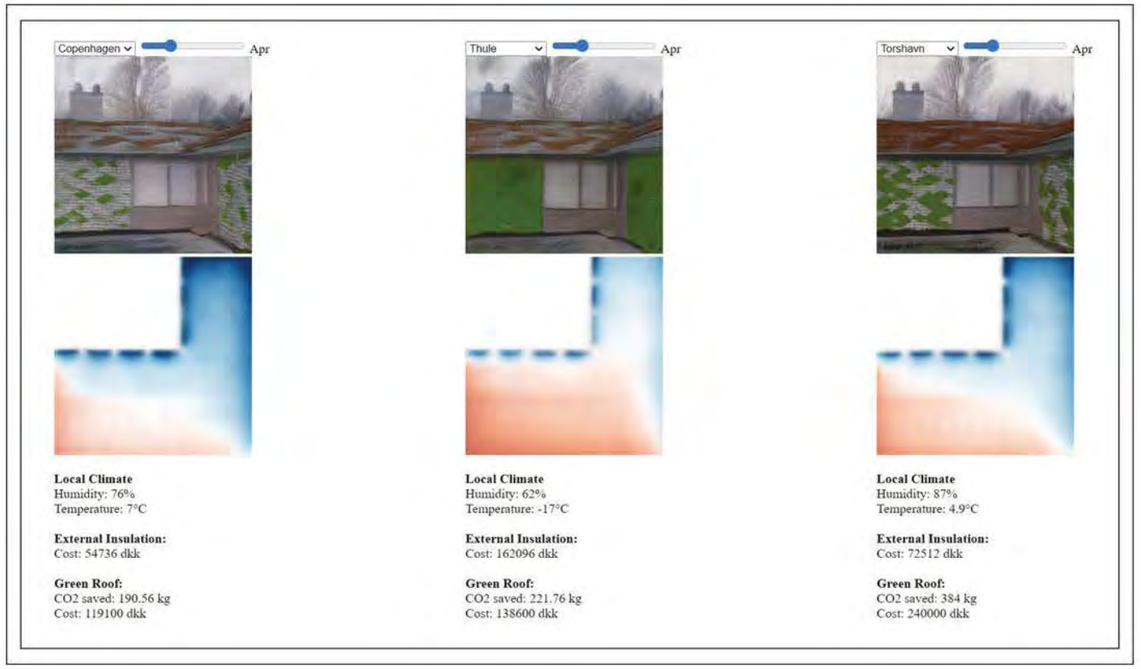


Changes in climate conditions are normalized into latent space search values to find the ideal visual representatives of climate change on panelling expressions. The output visual series are used to feedback into the pix2pix trained models to find the machine produced thermal simulations.

Copenhagen, walls 70% roof 30%

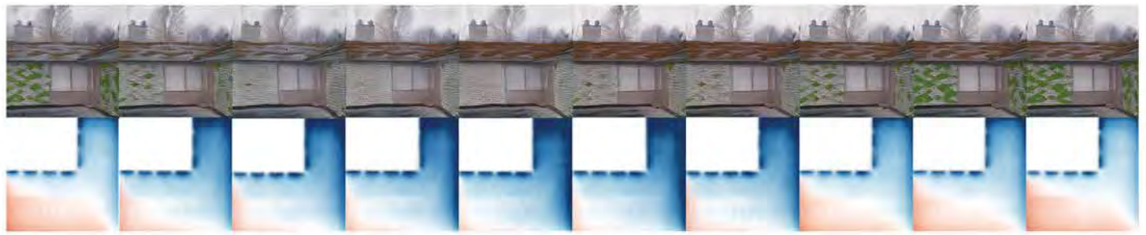
Copenhagen, walls 0% roof 60%

Copenhagen, walls 30% roof 70%

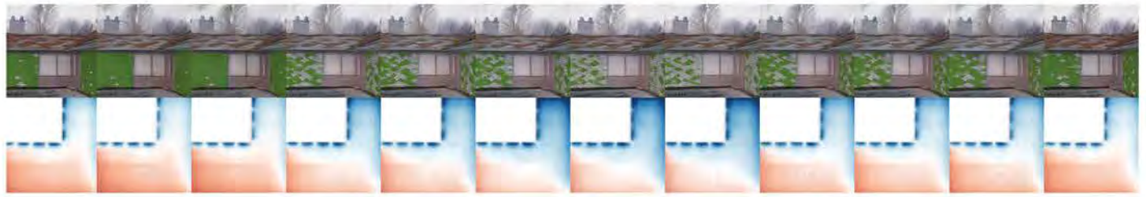


The entire modeling chain is then run in a simple web browser interface, allowing a non-expert user to choose cities and generate new images corresponding to specific months or periods of the year.

Copenhagen	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Temperature (C)	0	0	2	7	12	16	18	17	14	9	5	3
Rain (mm)	49	39	32	38	40	47	71	66	62	59	48	49
Wall coverage %	48	40	36	24	13	4	0	2	9	20	29	33
Roof coverage %	23	15	10	15	16	22	40	36	33	31	22	23
Wall position	1	1	2	5	7	9	10	10	8	6	4	3
roof position	5	6	7	6	6	5	2	3	3	4	5	5



Visualised data for Copenhagen



Visualised data for Nuuk

practice

project name:

ESHDAR PARDES

brief

RESIDENTIAL COMPLEX

office

Mann-Shinar Architects

location

Kiryat Ono, Israel

working period

2019-2020

project description

The project consists of 13 residential buildings, each with 13 stories and shared underground parking lots. A mixture of 813 apartments in different sizes, ranging from 50 sqm to 180 sqm, is assembled together to meet both the israeli permit requirements and and advanced pre-cast construction technologies.

tools

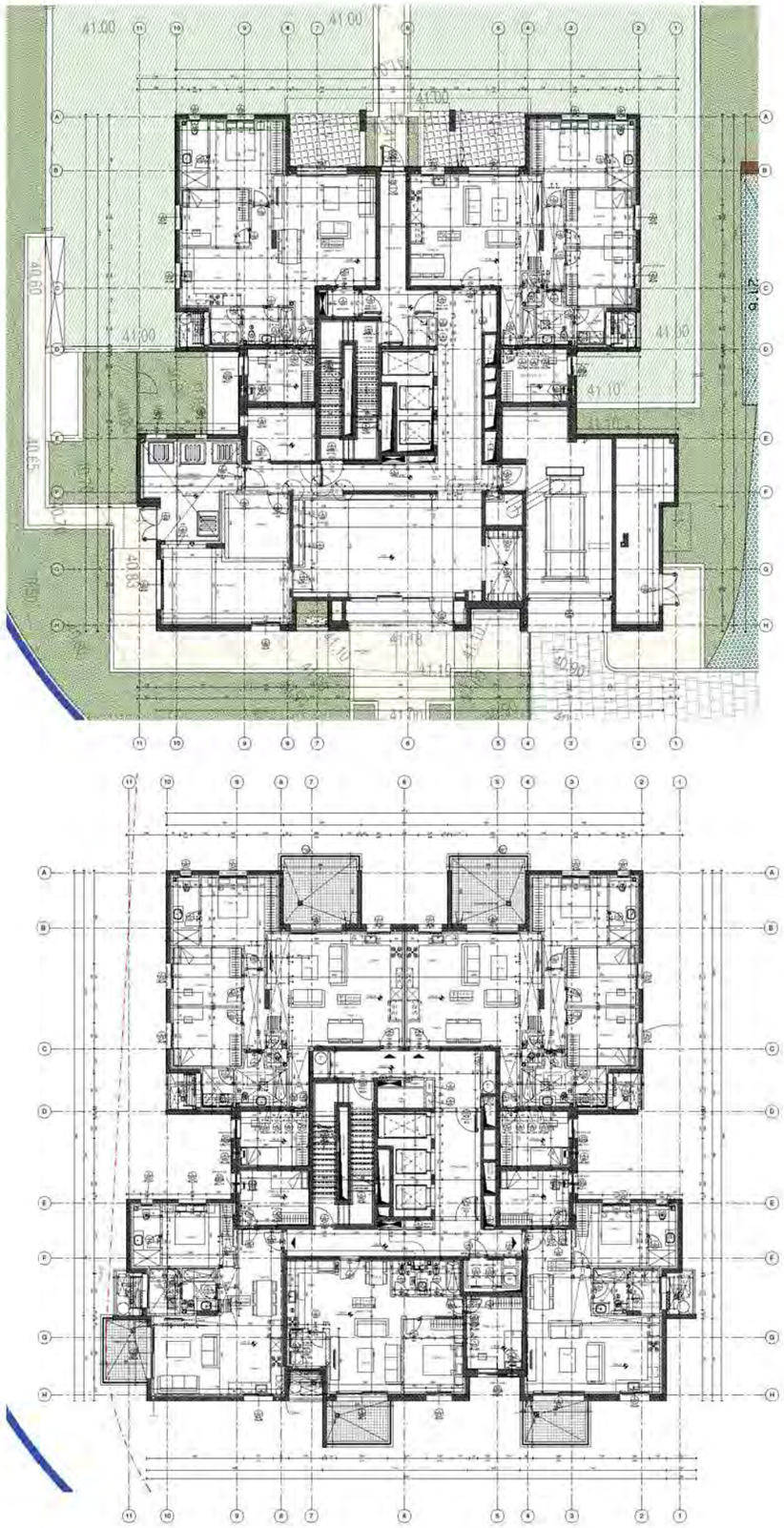
revit - the project was dont entirely in revit, working with design options, central and local models and links, BIM 360, from detail level to plans.

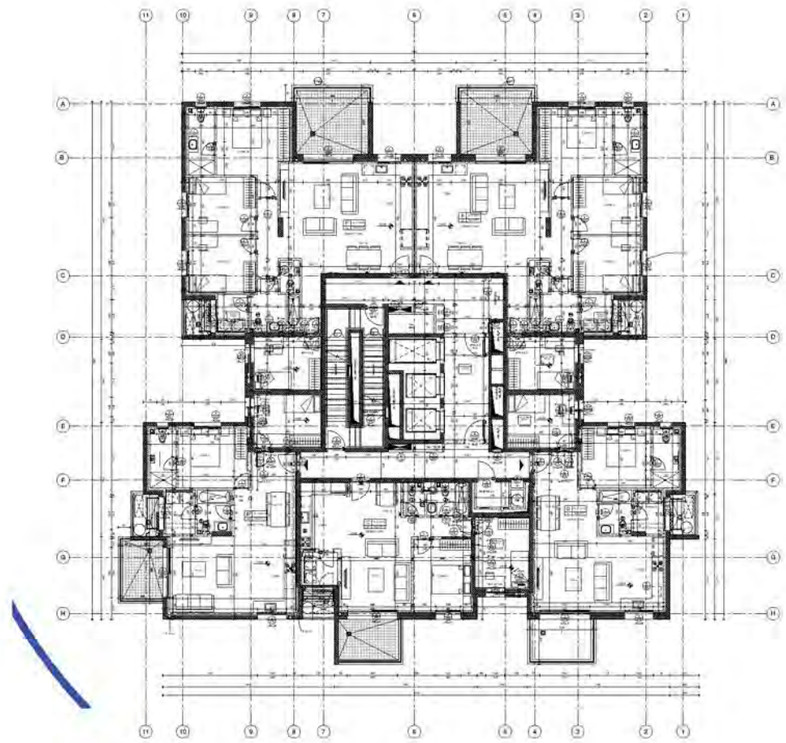
contribution

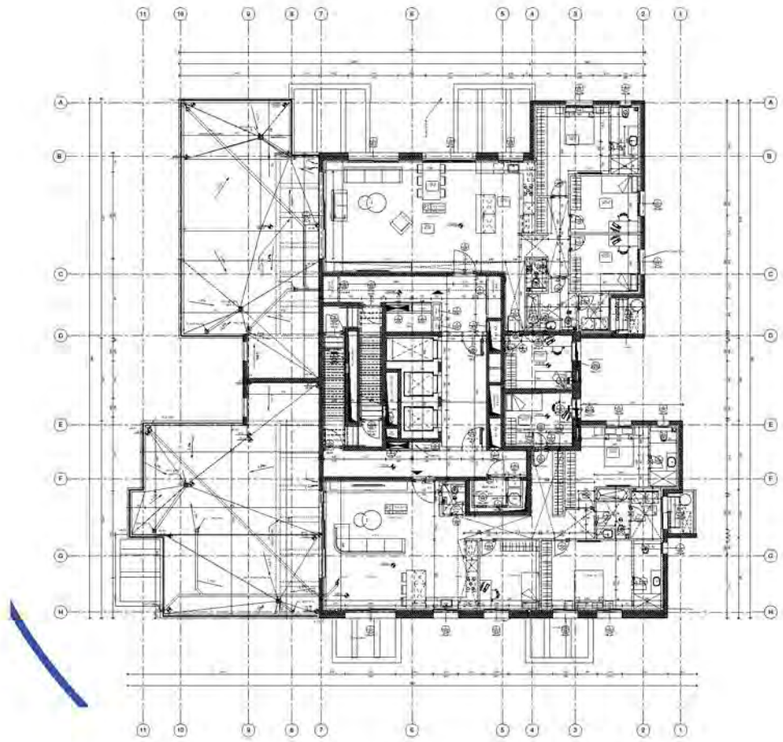
planning, drafting, consultant coordination, BIM coordination and management, detailed documentation for building permits, render coordination and design research.

MANN / SHINAR
ARCHITECTS & PLANNERS LTD.

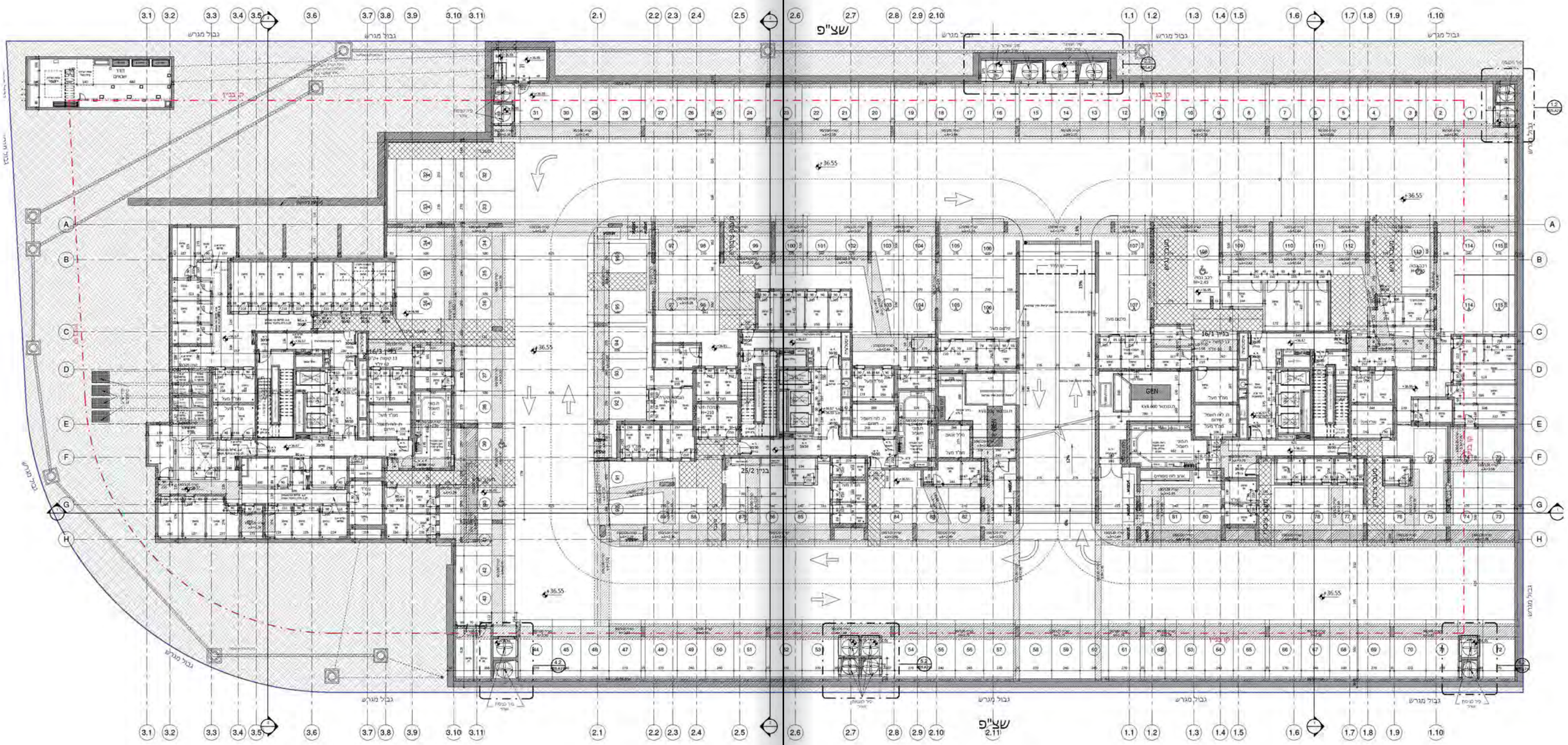
DETAILED PLANS - INDIVIDUAL BUILDING







SHARED PARKING LOT



SITE PLAN - AERIAL VIEW

project name:

NEW TALPIOT

brief

RESIDENTIAL COMPLEX

office

Mann-Shinar Architects

location

Jerusalem, Israel

working period

2019-2020

project description

New Talpiot is a residential complex of 8 buildings - each of 12 floors, and a total of352 apartments varying in size and shape. The complex includes a large, central public yard, as well as a 6000 sqm public building for a kindergarten and a community center.
By using the natural topography of the area, a large commercial strip can maintain high activity while keeping privacy for residents.

tools

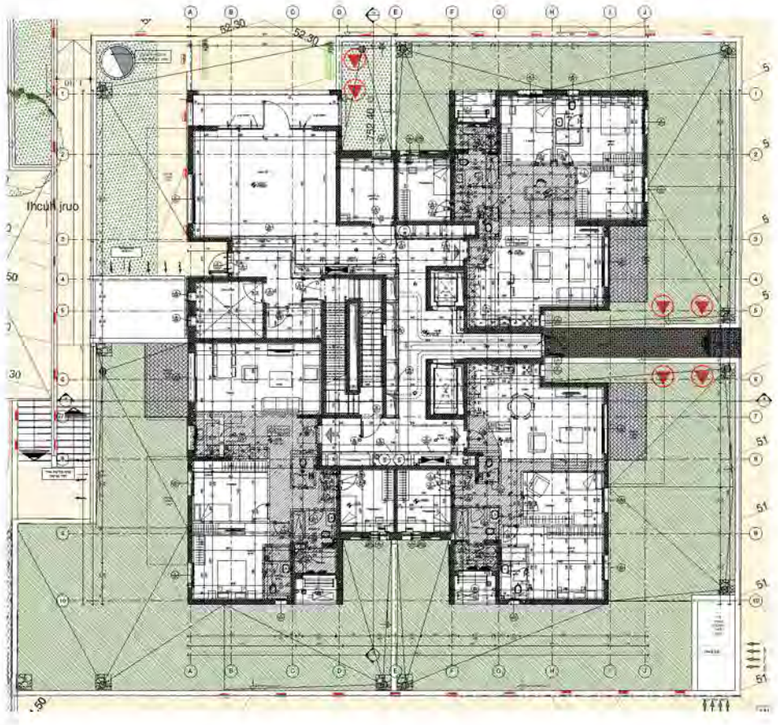
revit - the project was dont entirely in revit, working with design options, central and local models and links, BIM 360, from detail level to plans.

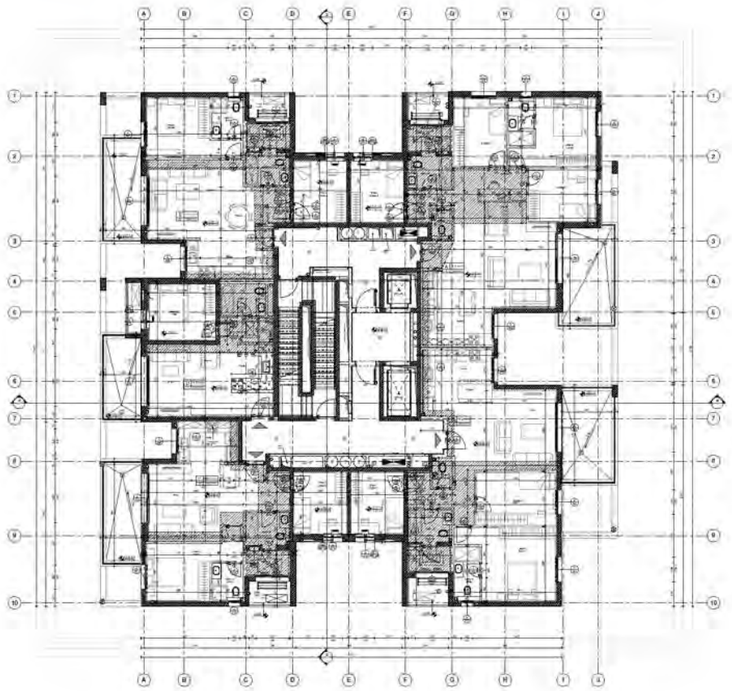
contribution

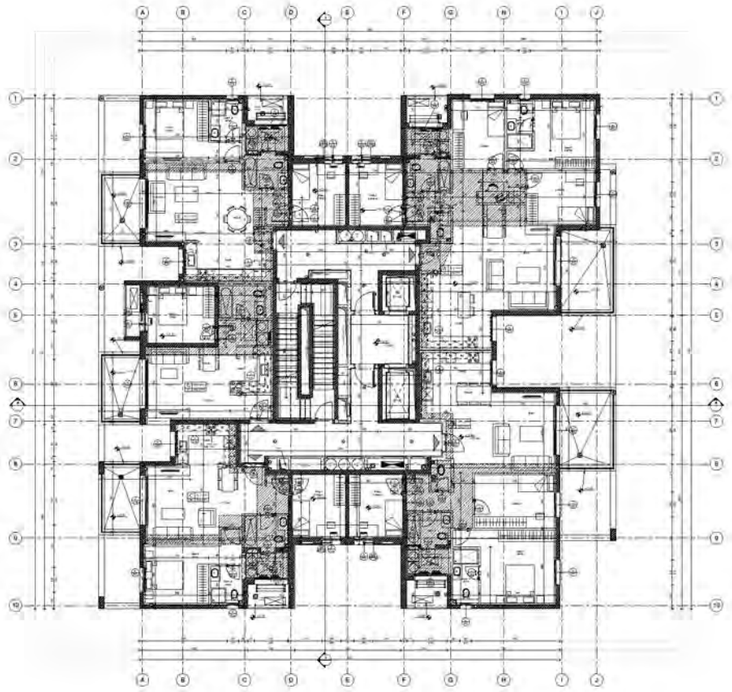
planning, drafting, consultant coordination, BIM coordination and management, detailed documentation for building permits, render coordination and design research.

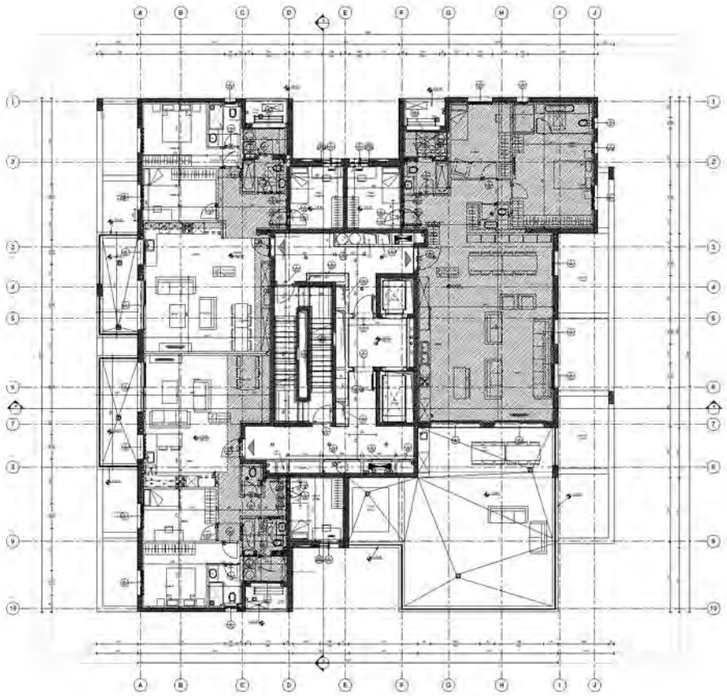
MANN / SHINAR
ARCHITECTS & PLANNERS LTD.

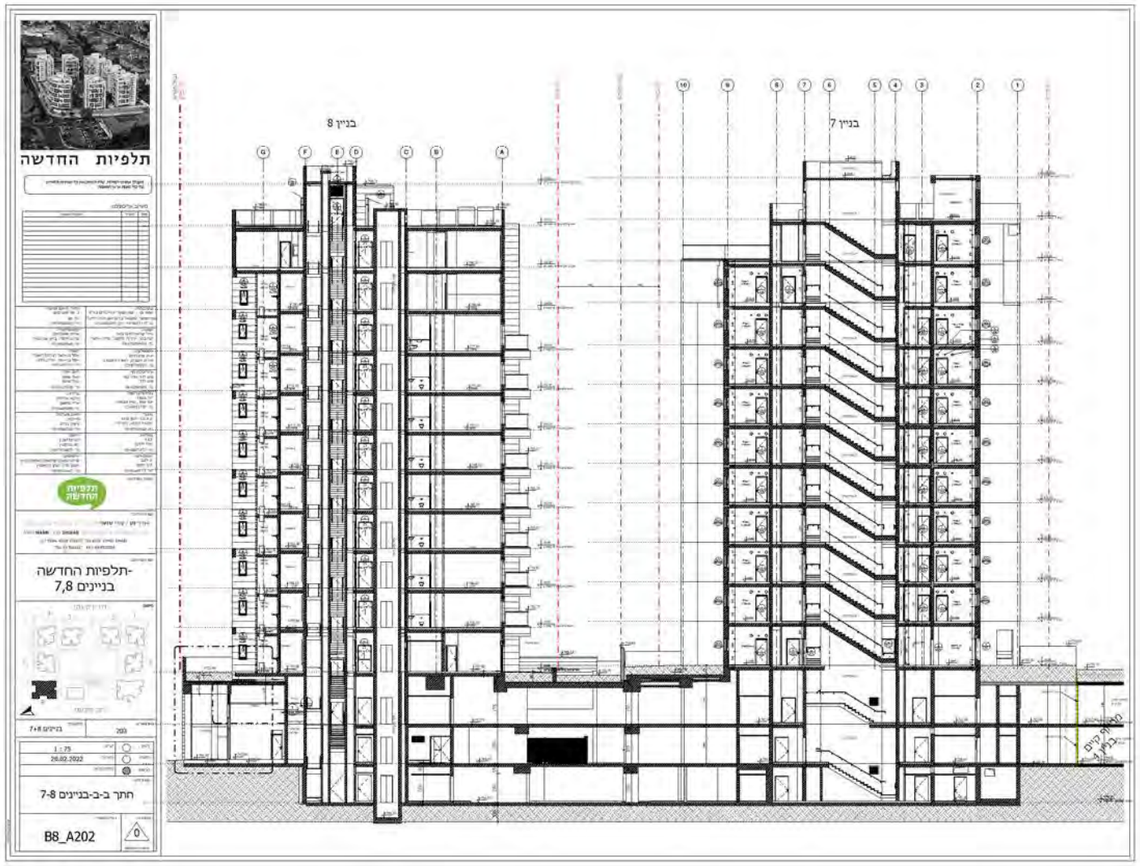
DETAILED PLANS - INDIVIDUAL BUILDING

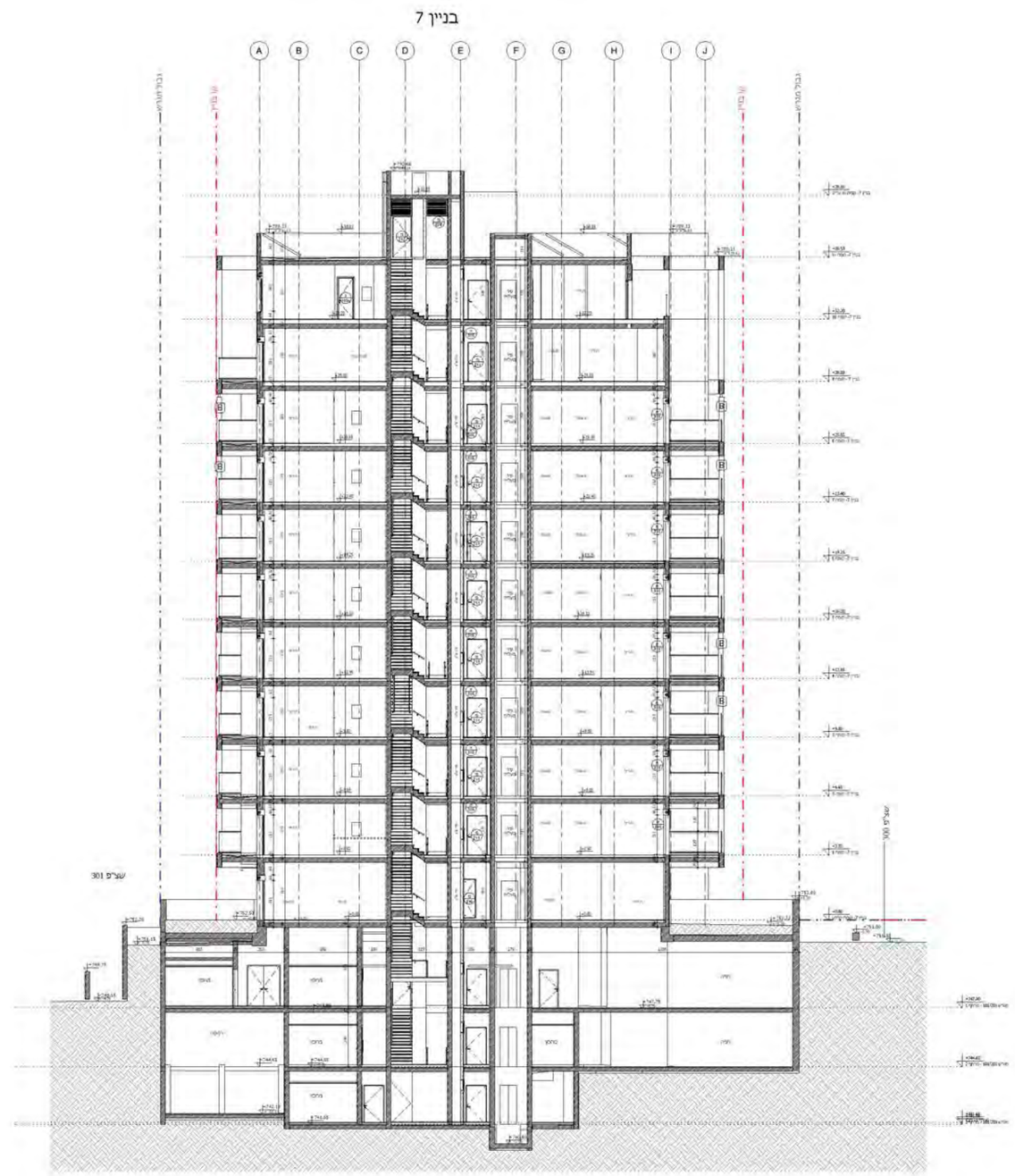









תלפיות החדשה
-תלפיות החדשה
בניינים 7,8
חתך ב-ב-בניינים 7-8
B8_A202
בניין 8
בניין 7

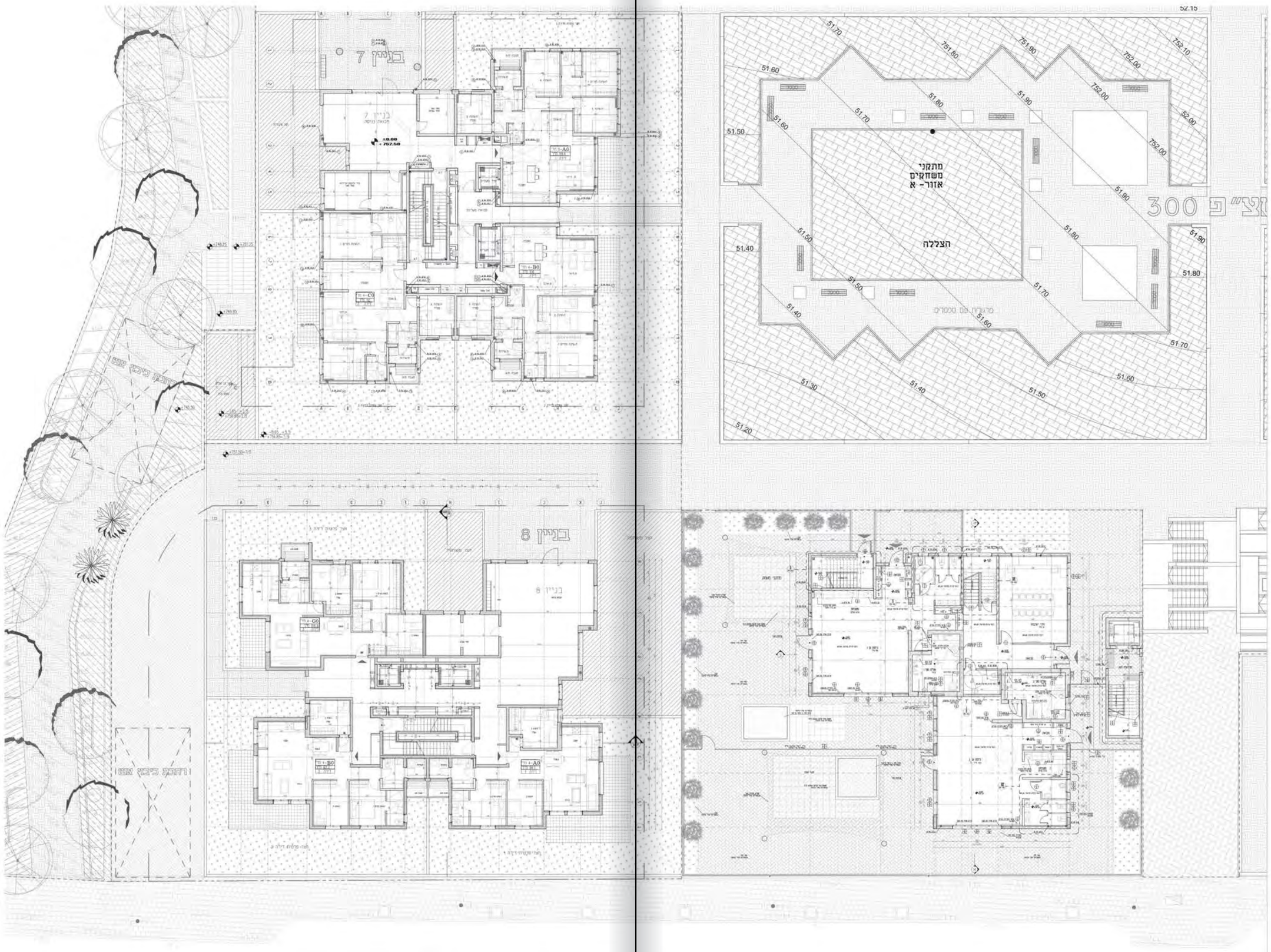

בניין 7
שער 301

ELEVATIONS


1
2
3
4
5
6
7
8
9
10
בניין 7
בניין 8
A
גבול מגרש
גבול מגרש
גבול מגרש


גבול מגרש
גבול מגרש
גבול מגרש
שצ"פ 301
שצ"פ 300

SITE PLAN


בניין 7
בניין 8
מתקני
משחקים
אזור - א
הצללה
51.70
51.80
51.90
52.00
52.10
51.60
51.50
51.40
51.30
51.20
752.00

project name:

HAPODIM 30

brief

URBAN RENEWAL

office

Ran Blander Architects

location

Ramat Gan, Israel

working period

2016-2019

project description

A medium scale urban renewal project, suggesting a complex of 111 residential units and over a 500 sqm kindergarten cluster, replacing an existing low-rise residential complex of 2 low-rise buildings. The project included a proposition for a new master-plan and detailed planning. It was approved in 2019 and has received a building permit in 2020.

tools

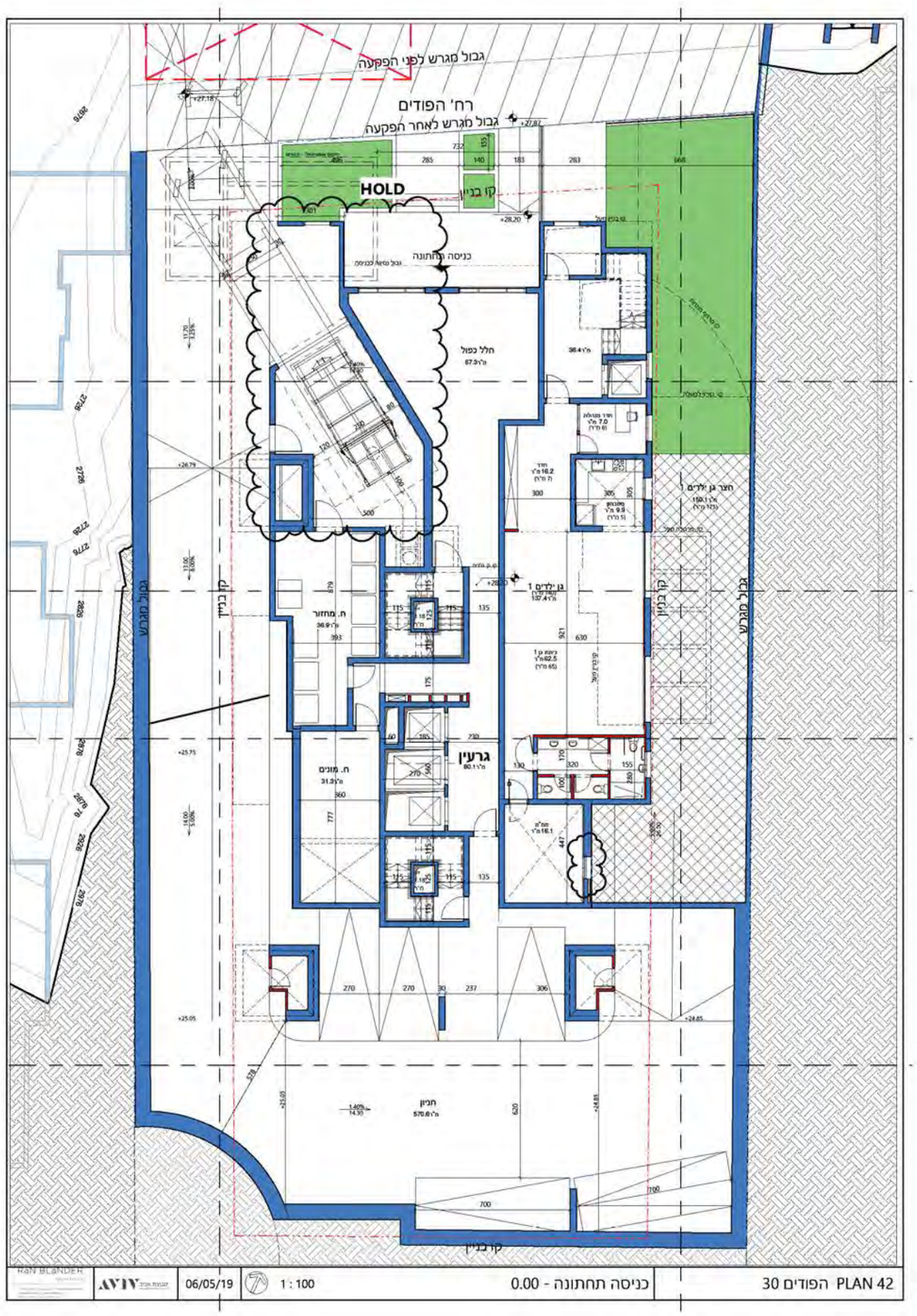
autocad - concept design, planning, drafting
sketchup and rhino - concept design modeling, site modeling
revit - detailed planning
adobe suit and powerpoint - presentations

contribution

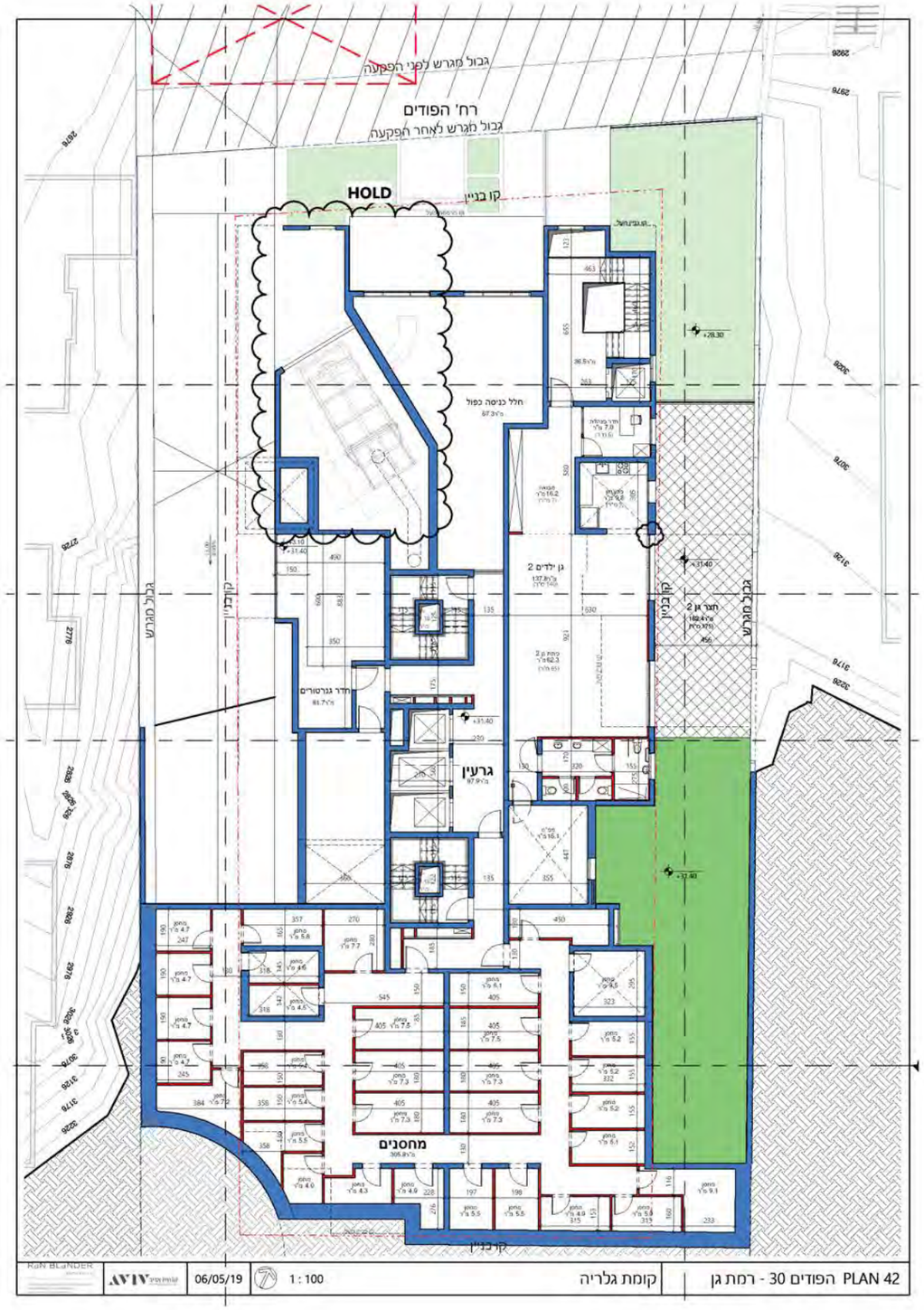
urban research, initial planning, drafting, client meetings and presentations, consultant coordination, documentation, permits and master plan applications

RaN BLaNDER
ARCHITECTS

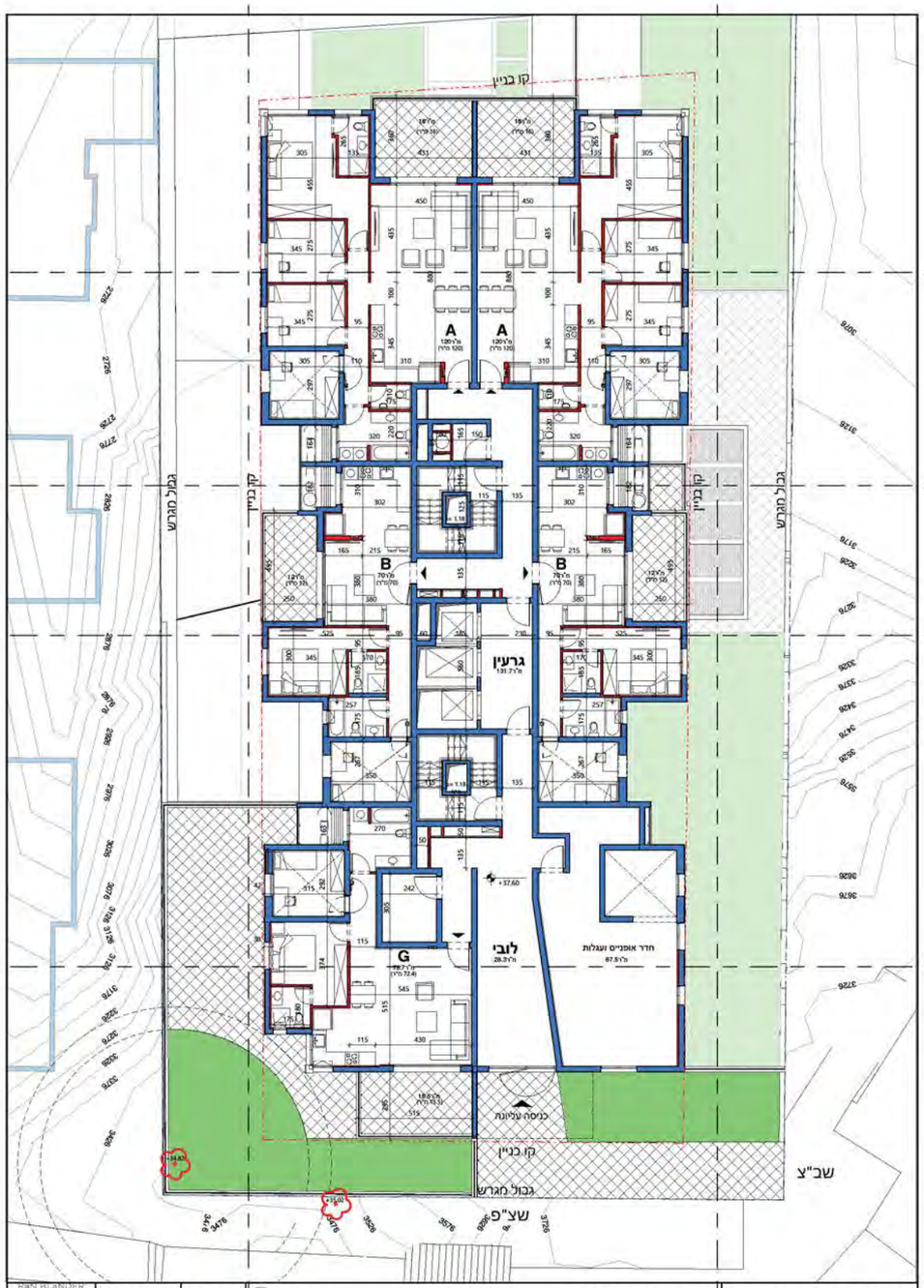
DETAILED PLANNING - LOWER ENTRANCE



DETAILED PLANNING - GALLERY

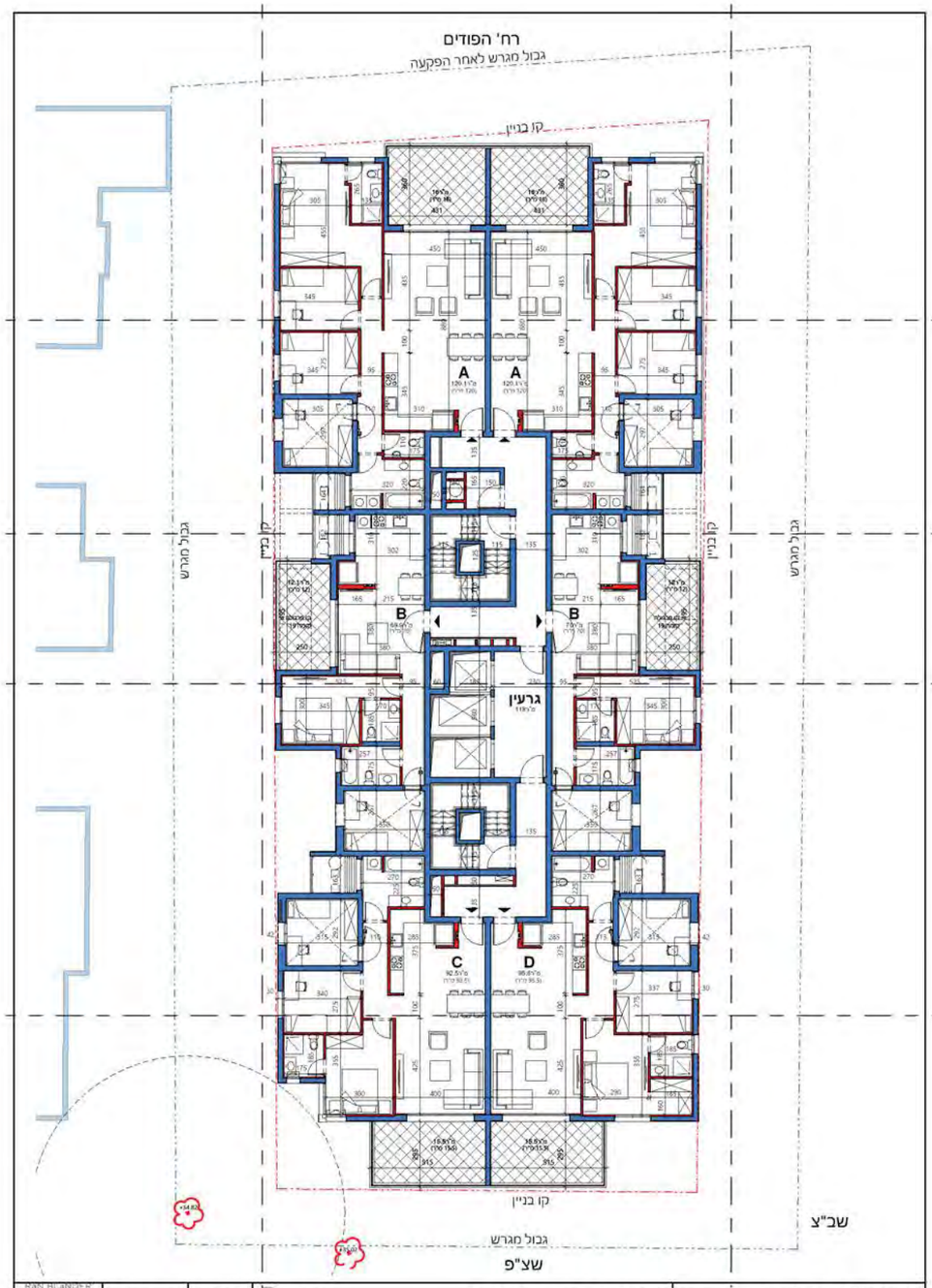


DETAILED PLANNING - GROUND FLOOR

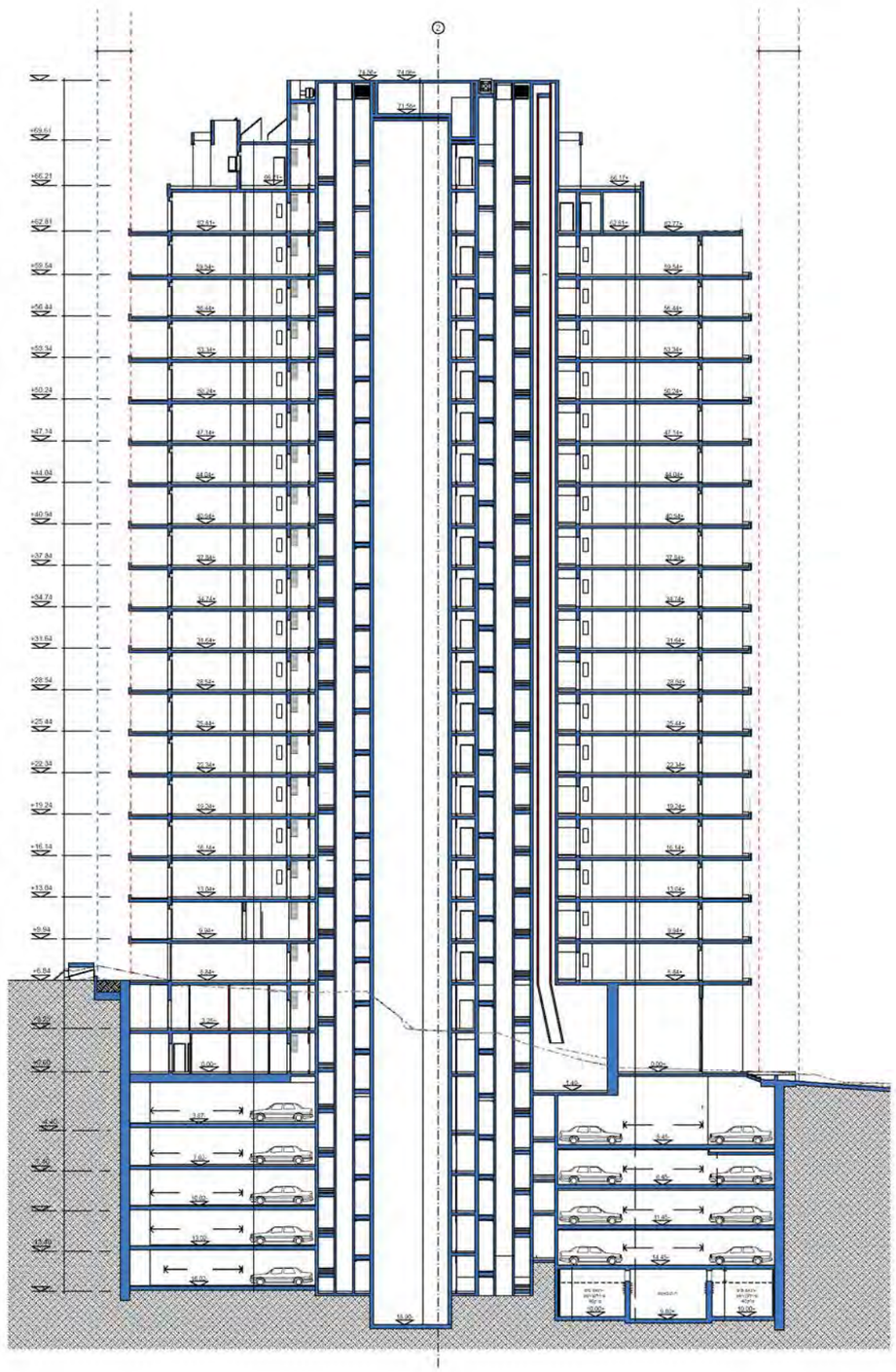


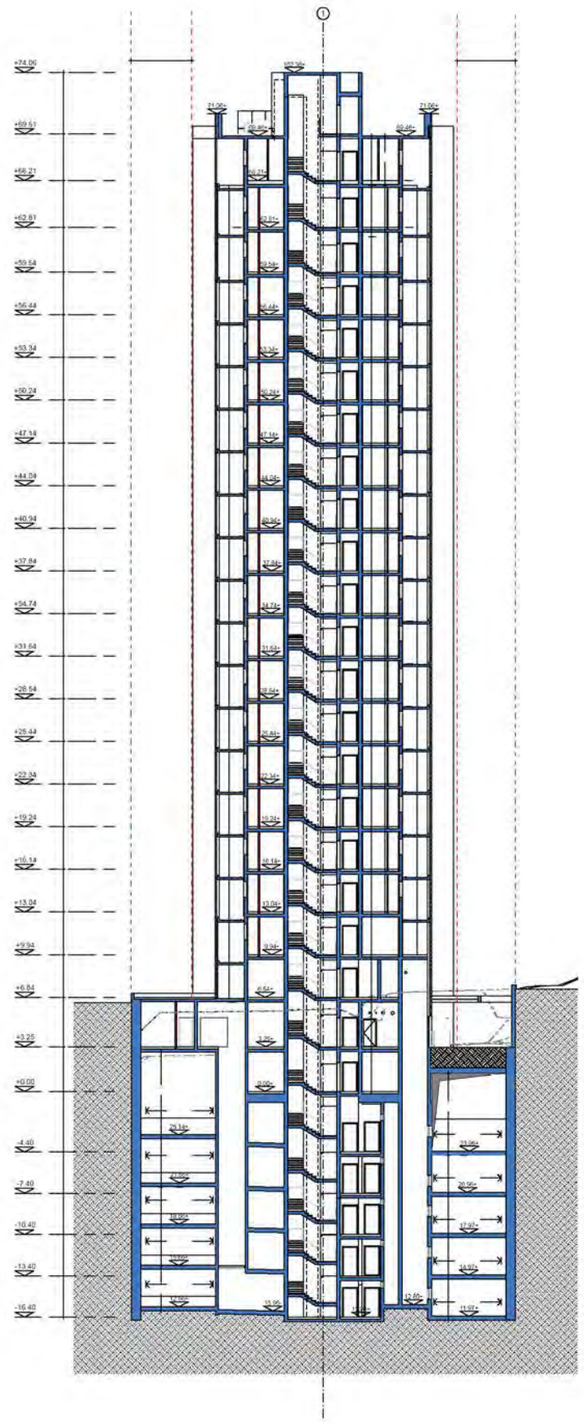
RAN BLANDER | AVIV | 06/05/19 | 1 : 100 | קומה 2 - כניסה עליונה | הפודים 30 | PLAN 42

DETAILED PLANNING - TYPICAL FLOOR PLAN



RAN BLANDER | AVIV | 06/05/19 | 1 : 100 | קומה טיפוסית - קומות 18 - 3 | PLAN 42 הפודים 30 - רמת גן





project name:

DERECH HASHALOM

brief

URBAN RENEWAL

office

Ran Blander Architects

location

Tel Aviv, Israel

working period

2016-2019

project description

A large scale urban renewal project, suggesting a large scale complex of 750 residential units and over 2000 sqm of public areas, replacing an existing low-rise neighborhood. The project focuses on urban scale suggestions of drastic master-plan changes.

tools

autocad - concept design, planning, drafting
sketchup and rhino - concept design modeling, site modeling
adobe suit and powerpoint - presentations

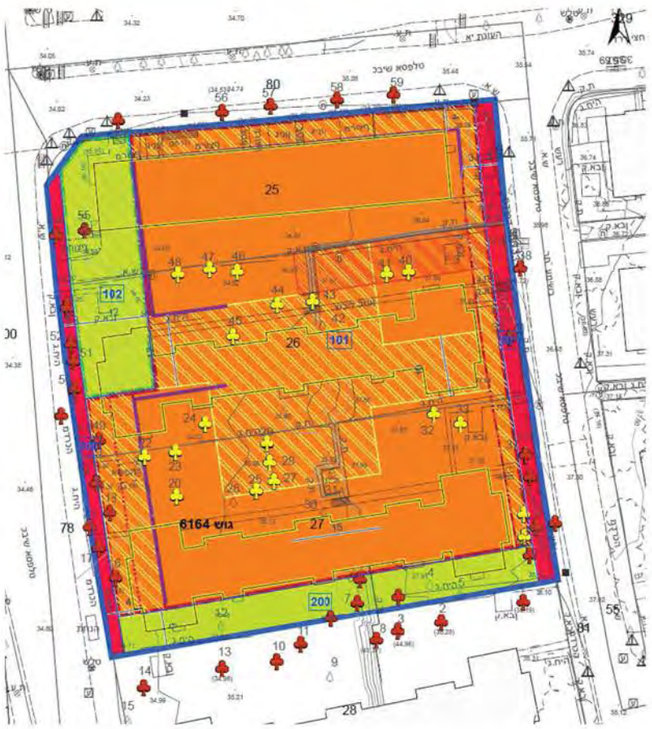
contribution

urban research, initial planning, drafting, client meetings and presentations, consultant coordination, documentation, permits and master plan applications

RaN BLaNDER
ARCHITECTS

MASTER PLAN

site existing master plan



suggested master plan

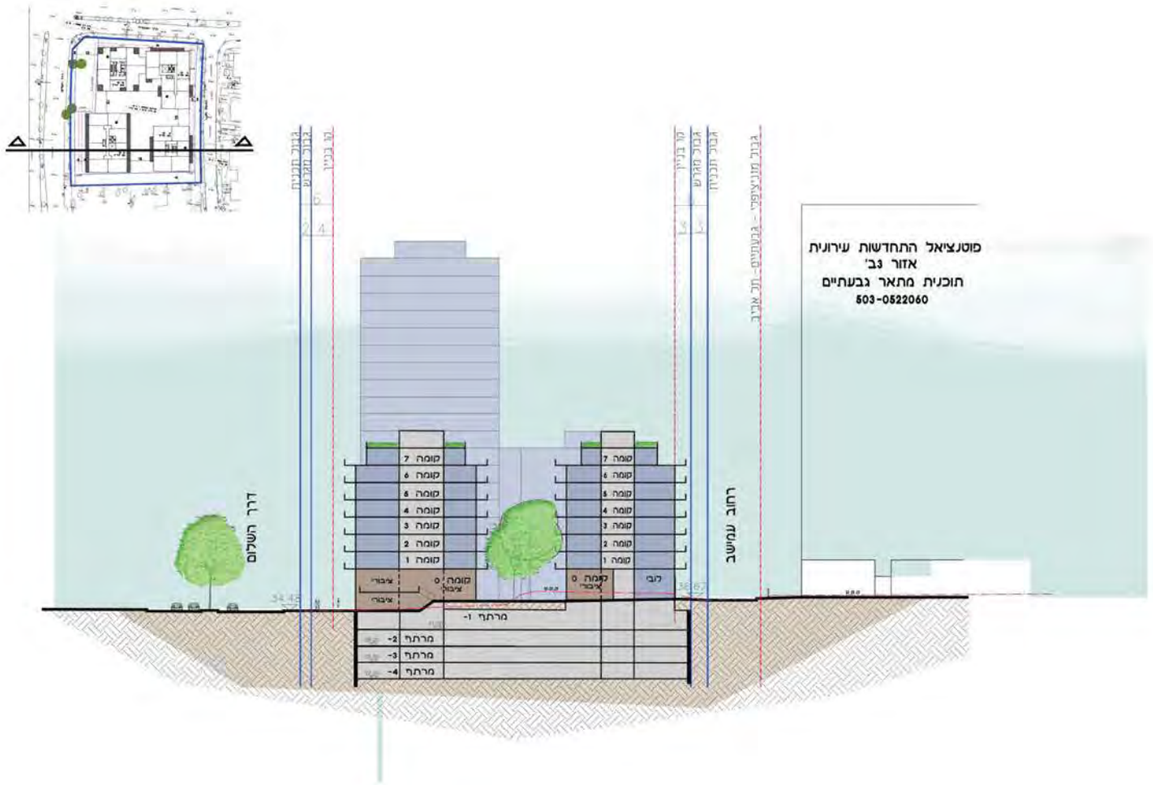
GROUND FLOOR PUBLIC AREAS

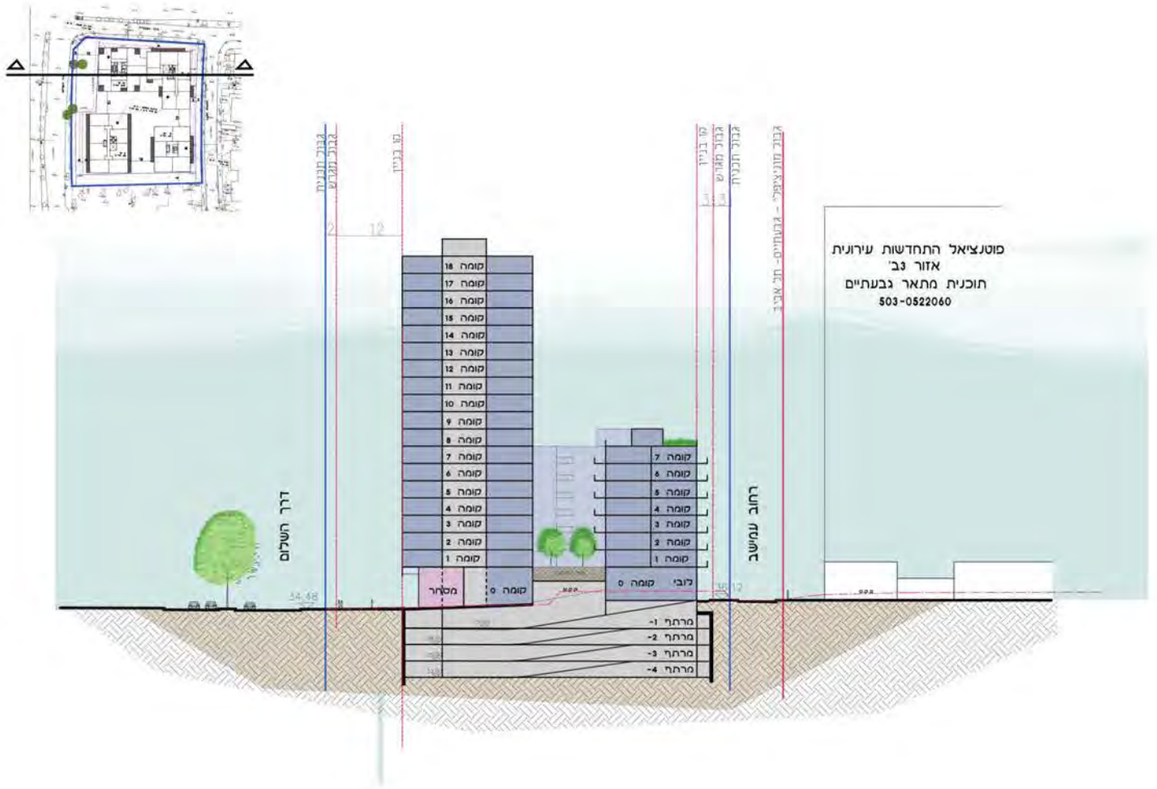
public and trade areas in ground floor

public built area in 1st floor

1, continuous trade area, 750 sqm, along the street up to the entrance to the inner garden
2. urban square
3. ~1000 sqm public area, ~260 sqm attached outdoor area
4. expansion of Amishav street
5. possibility of attaching additional external area to the southern public area
6. public padestrian passage

SCHEMATIC SECTIONS





project name:

HERZEL 74

brief

URBAN RENEWAL

office

Ran Blander Architects

location

Bat-Yam, Israel

working period

2017-2019

project description

A medium scale urban renewal project, suggesting the replacement of an old apartment building into a mixed use building, of 750 residential units and over 2000 sqm of public areas, The project focuses on urban scale suggestions as well as detailed planning of the suggested building. in 2021 the project's suggested master plan was accepted.

tools

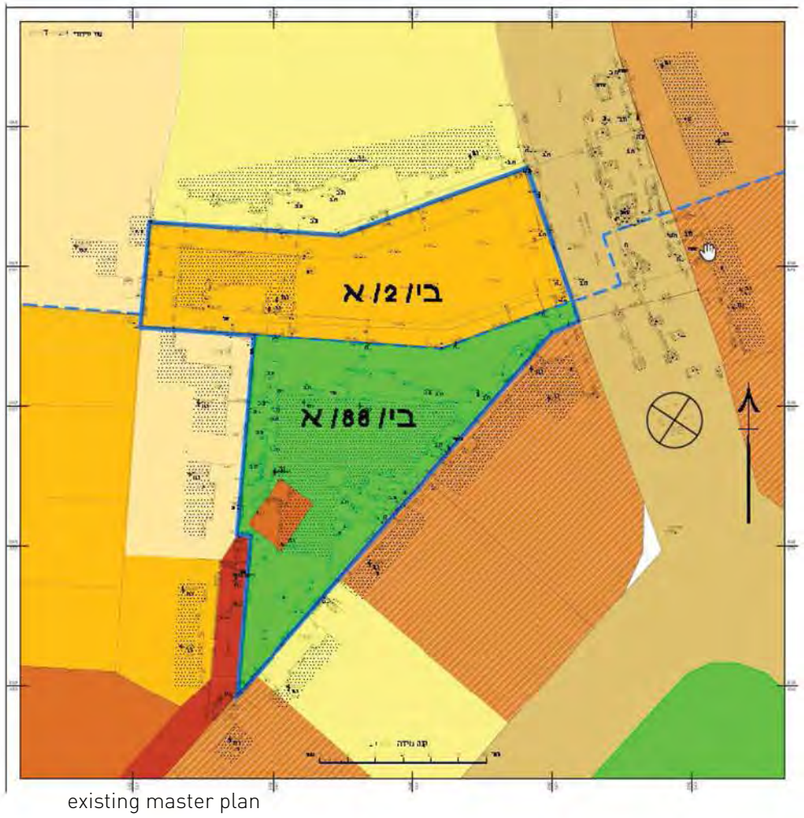
autocad - concept design, planning, drafting
sketchup and rhino - concept design modeling, site modeling
adobe suit and powerpoint - presentations

contribution

urban research, initial design and planning, detailed floor planning, drafting, client meetings and presentations, consultant coordination, documentation, permits and master plan applications

RaN BLaNDER
ARCHITECTS

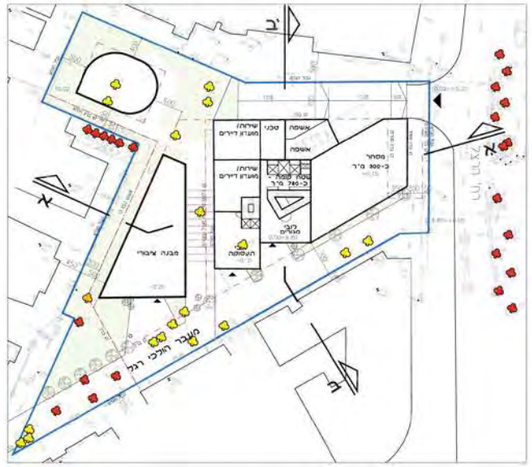
MASTER PLAN PROPOSITION

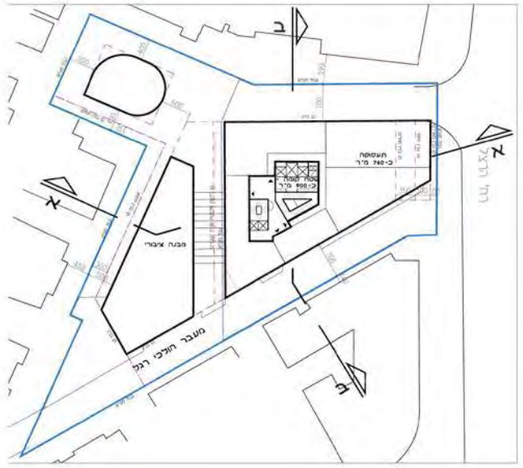


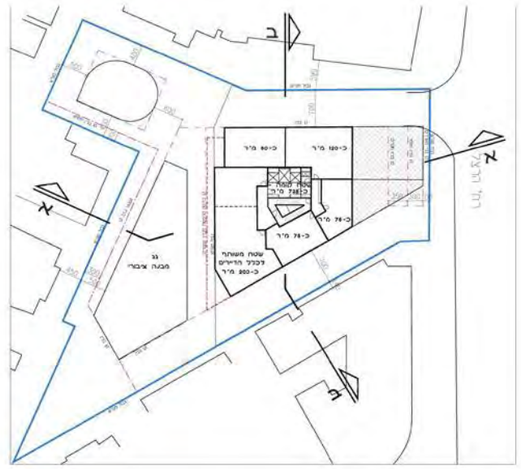
existing master plan

suggested master plan

INITIAL PLANNING

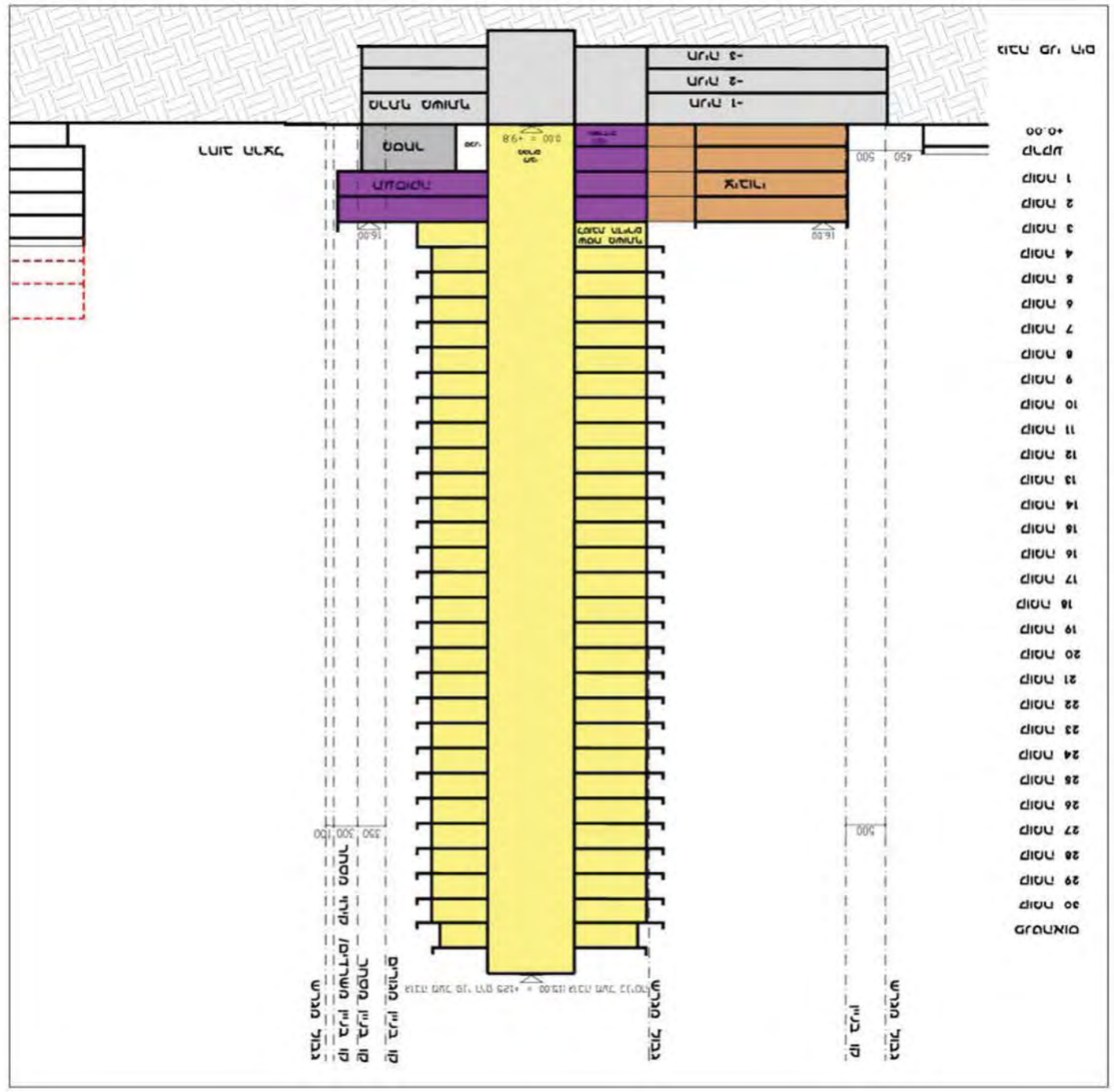






SCHEMATIC SECTIONS

חתך א-א 1:500



VIEWS

http://www.nitsanbartov.com/